FOR YOUR SAFETY
If you smell gas:

1. Open windows.
2. DO NOT try to light any appliance.
3. DO NOT use electrical switches.
4. DO NOT use any telephone in your building.
5. Leave the building.
6. Immediately call your local gas supplier after leaving the building. Follow the gas supplier's instructions.
7. If you cannot reach your gas supplier, call the Fire Department.

⚠ WARNING

Fire Hazard

Do not store or use petrol or other flammable vapours and liquids in the vicinity of this or any other appliance.

Some objects will catch fire or explode when placed close to heater.

Failure to follow these instructions can result in death, injury or property damage.

CLIMATE SOLUTIONS

RADIANT Services

Radiant Services™ BH

Vacuum Assisted Linear, Double Linear, U-Tube, and Multi-Burner Gas Fired Heating Systems

Installation, Operation & Service Manual

BH15UT	BH15ST	BH30DL
BH20UT	BH20ST	BH40DL
BH25UT/EF	BH25ST/EF	BH50DL/EF
BH30UT/EF	BH30ST/EF	BH60DL/EF
BH35UT/EF	BH35ST/EF	BH70DL/EF
BH40UT/EF	BH40ST/EF	
BH45UT/EF	BH45ST/EF	
BH50UT/EF	BH50ST/EF	
	BH55ST	

⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can result in death, injury or property damage. Read the installation, operation and service manual thoroughly before installing or servicing this equipment.

Installation must be done by a registered installer/ contractor qualified in the installation and service of gas-fired heating equipment or your gas supplier.

Installer

Please take the time to read and understand these instructions prior to any installation. Installer must give a copy of this manual to the owner.

Owner

Keep this manual in a safe place in order to provide your serviceman with necessary information.

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CE

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TABLE OF CONTENTS

SECTION 1: Heater Safety 1
1.1 Manpower Requirements 1
SECTION 2: Installer Responsibility 1
2.1 Low Level User Instructions 1
2.2 Corrosive Chemicals 1
2.3 National Standards and Applicable Codes 1
SECTION 3: Critical Considerations 2
3.1 Required Clearances to Combustibles 2
3.2 Clearance Data - Linear and Double Linear 3
3.3 Clearance Data -U Tube 5
SECTION 4: Major Component Descriptions 7
SECTION 5: General Suspension Details 8
SECTION 6: Linear & Double Linear Heater Installation 9
6.1 Linear Standard Parts List 9
6.2 Double Linear Standard Parts List 12
6.3 Burner Tube Installation 15
6.4 Coupling and Tube Assembly 15
6.5 Tube Clamp Package Installation 17
6.6 Reflector Installation 17
6.7 Double Linear Tee Installation (for double linear heaters only) 19
SECTION 7: U-Tube Heater Installation 20
7.1 U-Tube Standard Parts List 20
7.2 U-Tube Hanger Placement 23
7.3 Burner Tube and Fan Tube Installation 23
7.4 U-Tube Support Bracket Assembly Installation 24
7.5 Coupling and Tube Assembly 25
7.6 Tube Installation 26
7.7 U-Tube Installation 26
7.8 Reflector Installation 27
SECTION 8: Multiburner Configuration & Installation 29
8.1 Initial Assembly 29
SECTION 9: Burner & Fan Installation 30
9.1 Burner Installation 30
9.2 Fan Assembly 30
9.3 Linear & U-Tube Fan Installation 31
9.4 Double Linear Fan Installation 31
9.5 Multiburner 83/90 BWLG Fan Assembly (Horizontal and Vertical Outlets) 32
9.6 Condensate Drain Assembly 33
SECTION 10: Optional Heater Accessories 34
10.1 Reflector Side Extension Installation 34
10.2 U-Tube Cover Installation 35
10.3 Decorative Grille Installation 36
10.4 Protective Grille Installation 37
10.5 Sports Hall Guard Installation 38
10.6 Undershield Installation 39
10.7 Wall Mounting 40
SECTION 11: Venting 41
11.1 Flue Installation 41
11.2 Flueless Installation 41
11.3 Ventilation Requirements 41
11.4 Outside Combustion Air Supply 42
11.5 Common Duct 43
SECTION 12: Gas Piping 44
SECTION 13: Wiring 45
13.1 RADIANT SERVICES™ Typical External Wiring Diagram (Linear or U-Tube) 45
13.2 RADIANT SERVICES™Typical External Wiring Diagram (Double Linear Option 1) 46
13.3 RADIANT SERVICES™ Typical External Wiring Diagram (Double Linear Option 2) 46
13.4 RADIANT SERVICES™ Typical External Wiring Diagram (Multiburner) 47
13.5 RADIANT SERVICES™ Internal Wiring Diagram 48
SECTION 14: Operation 49
14.1 Heater Lockout Indication (Optional) 49
14.2 Testing 49
14.3 Commissioning (Multiburner) 49
14.4 System Checks 50
14.5 User Instructions 50
SECTION 15: Servicing Instructions 51
15.1 Annual Procedure 51
15.2 Component Removal 51
15.3 Maintenance Checklist 52
SECTION 16: Troubleshooting 54
16.1 Troubleshooting Flow Chart (Linear, Double Linear and U-Tube) 54
16.2 Troubleshooting Flow Chart (Multiburner) 56
16.3 Manifold Gas Pressure Setting 58
SECTION 17: Replacement Parts 59
SECTION 18: Specifications 60
18.1 Material Specifications 60
18.2 Heater Specifications 60
18.3 Venting Specifications 60
18.4 Suspension Specifications 60
18.5 Controls Specifications 60
18.6 Linear Heater 61
18.7 Double Linear Heater 61
18.8 U-Tube Heater 61
18.9 Burner Specifications 62

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TABLE OF FIGURES

Figure 1: Linear & Double Linear, Horizontal Mounts.....3
Figure 2: Linear & Double Linear, One Side Reflector 3
Figure 3: Linear & Double Linear, Two Side Reflectors ...3
Figure 4: Linear & Double Linear, 45° Mount 3
Figure 5: Linear & Double Linear, 1 Foot and
2 Foot Deco Grille 4
Figure 6: Linear & Double Linear, Protective Grille 4
Figure 7: Undershield 4
Figure 8: Linear & Double Linear, Venting.....4
Figure 9: U-Tube, Horizontal Mount 5
Figure 10: U-Tube, One Side Reflector.....5
Figure 11: U-Tube, Two Side Reflectors 5
Figure 12: U-Tube, Full 45° Mount.....5
Figure 13: U-Tube, Opposite 45° Tilt 6
Figure 14: U-Tube, Protective Grille.....6
Figure 15: U-Tube, Venting.....6
Figure 16: Critical Hanger Placement 8
Figure 17: RADIANT SERVICES™ Linear General
Assembly Overview 10
Figure 18: RADIANT SERVICES™ Linear Layout
Overviews 11
Figure 19: RADIANT SERVICES™ Double Linear General
Assembly Overview 13
Figure 20: RADIANT SERVICES™ Double Linear Layout
Overviews 14
Figure 21: RADIANT SERVICES™ U-Tube Assembly
Overview.....21
Figure 22: RADIANT SERVICES™ U-Tube Layout
Overviews 22
Figure 23: Multiburner Damper Flange Installation 29
Figure 24: Typical Manifold Layout
(Linear and U-Tube Configuration).....29
Figure 25: U-Tube (Horizontal).....40
Figure 26: U-Tube (Angle Mounted).....40
Figure 27: Linear 40
Figure 28: Individual Flue Connection Detail.....41
Figure 29: Flue Connection Dimensions 42
Figure 30: Fresh Air Intake Spigot.....42
Figure 31: Air Supply with Flue Configurations 43
Figure 32: Gas Connection with Stainless Steel Flex
Connector.....44
Figure 33: Sequence of Operation Chart 49
Figure 34: Burner Cup Position.....51
Figure 35: RADIANT SERVICES™ Linear and U-Tube
Specifications.....62

SECTION 1: HEATER SAFETY

Your Safety is Important to Us!

This symbol is used throughout the manual to notify you of possible fire, electrical or burn hazards. Please pay special attention when reading and following the warnings in these sections.

Installation, service and annual inspection of heater must be done by a registered installer/contractor qualified in the installation and service of gas-fired heating equipment.

Read this manual carefully before installation, operation or service of this equipment.

This heater is designed for heating nonresidential indoor spaces. Do not install in residential spaces. These instructions, the layout drawing, local codes and ordinances, and applicable standards that apply to gas piping, electrical wiring, venting, etc., must be thoroughly understood before proceeding with the installation.

Thin sheet metal parts, such as the reflector portion of the heater and the various venting components, have sharp edges. To prevent injury, the use of work gloves is recommended. The use of gloves will also prevent the transfer of body oils from the hands to the surface of the reflector.

Before installation, check that the local distribution conditions, nature of gas and pressure, and adjustment of the appliance are compatible.

1.1 Manpower Requirements

To prevent personal injury and damage to the heater, two persons will be required for installation.

SECTION 2: INSTALLER RESPONSIBILITY

- To install the heater, as well as the gas and electrical supplies, in accordance with applicable specifications and codes. Radiant Services recommends the installer contact a local Building Inspector or Fire Marshal for guidance.
- To use the information given in a layout drawing and in the manual together with the cited codes and regulations to perform the installation.
- To install the heater in accordance with the clearances to combustibles.
- To furnish all needed materials not furnished as standard equipment.
- To plan location of supports.
- To provide access to burners for servicing on all sides, for burner removal.
- To provide the owner with a copy of this installation, operation and service manual.
- To never use heater as support for a ladder or other access equipment and never hang or suspend anything from heater.
- To ensure there is adequate air circulation around the heater and to supply air for combustion, ventilation and distribution in accordance with local codes.

2.1 Low Level User Instructions

In all situations, clearances to combustibles must be maintained. Signs should be posted in storage areas to specify the maximum stacking height of items placed below heater to maintain required clearances to combustibles. Minimum clearances must be maintained from vehicles parked below the heater. Caution should be used when running the system near combustible materials such as wood, paper, rubber, etc. Consideration should be given to partitions, storage racks, hoists, building construction, etc.

A laminated wall tag is available for the heater as a permanent reminder of the safety instructions and the importance of the required clearances to combustibles. Please contact Radiant Services or your RADIANT SERVICES™ independent distributor to obtain the wall tag. Affix the tag by peeling off the backing of the adhesive strips on the rear surface and position the tag on a wall near the heater (e.g. thermostat orRADIANT SERVICES™ Controller).

A copy of the wall tag (P/N 91037926) is illustrated on the back cover. This copy of the wall tag can be affixed on the wall near the heater. Know your model number and installed configuration. Model number and installed configuration are found on the burner and in the Installation, Operation and Service Manual. Write the largest clearance dimensions with permanent ink according to your model number and configuration in the open spaces on the tag.

2.2 Corrosive Chemicals

⚠ CAUTION

Do not use heater in an area containing corrosive chemicals.

Avoid the use of corrosive chemicals to ensure a longer life of the burner, tubing and other parts.

Failure to follow these instructions can result in property damage.

Radiant Services cannot be responsible for ensuring that all appropriate safety measures are undertaken prior to installation; this is entirely the responsibility of the installer. It is essential that the contractor, the sub-contractor, or the owner identifies the presence of combustible materials, corrosive chemicals or halogenated hydrocarbons* anywhere in the premises.

** **Halogenated Hydrocarbons** are a family of chemical compounds characterized by the presence of halogen elements (fluorine, chlorine, bromine, etc.). These compounds are frequently used in refrigerants, cleaning agents, solvents, etc. If these compounds enter the air supply of the burner, the lifespan of the heater components will be greatly reduced. An outside air supply must be provided to the burners whenever the presence of these compounds is suspected. Warranty will be invalid if the heater is exposed to halogenated hydrocarbons.*

2.3 National Standards and Applicable Codes

All appliances must be installed in accordance with the latest revision of the applicable standards and national codes. This refers also to the electric, gas and venting installation. Note: Additional standards for installations in public garages, aircraft hangars, etc. may be applicable.

SECTION 3: CRITICAL CONSIDERATIONS

⚠ WARNING

Fire Hazard

Some objects will catch fire or explode when placed close to heater.

Keep all flammable objects, liquids and vapours the required distance away from the heater.

Failure to follow these instructions can result in death, injury or property damage.

3.1 Required Clearances to Combustibles

Clearances are the required distances that combustible objects must be away from the heater to prevent fire hazards. Caution should be used when running the system near combustibles. Combustibles are materials, which may catch on fire and include common items such as wood, paper, rubber, fabric, etc. **Maintain clearances to combustibles at all times for safety.**

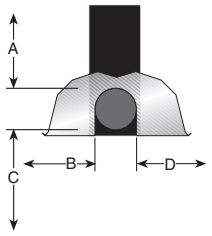
Clearances for all heater models are located *on Page 3, Figure 1 through Page 6, Figure 15* in this manual. Check the clearances on each burner for the model heater being installed to make sure the product is suitable for your application and the clearances are maintained. Read and follow the safety guidelines below:

- Keep petrol or other combustible materials including flammable objects, liquids, dust or vapours away from this heater or any other appliance.
- Maintain clearances from heat sensitive material, equipment and workstations.
- Maintain clearances from vehicles parked below the heater.
- Maintain clearances from swinging and overhead doors, overhead cranes, vehicle lifts, partitions, storage racks, hoists, building construction, etc.
- In locations used for the storage of combustible materials, signs must be posted to specify the maximum permissible stacking height to maintain required clearances from the heater to the combustibles. Signs must be posted adjacent to the heater thermostat. In the absence of a thermostat, signs must be posted in a conspicuous location.
- Consult local Building Inspector, Fire Insurance Carrier or other authorities for approval of proposed installation when there is a possibility of exposure to combustible airborne materials or vapours.
- Hang heater in accordance to the minimum suspension requirements on *Page 61, Section 18.6 through Section 18.8*.

3.2 Clearance Data - Linear and Double Linear

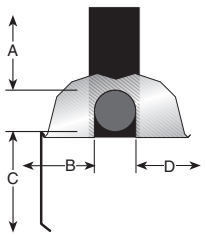
NOTE:
1. All dimensions are from the surfaces of all tubes, couplings, tees, elbows and crosses.
2. Clearances B, C and D can be reduced by 50% after 7.5 m of tubing downstream from the burner.
3. All measurements are in millimeters.

FIGURE 1: LINEAR & DOUBLE LINEAR, HORIZONTAL MOUNTS



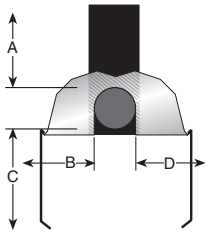
Model	BH15ST BH30DL	BH20ST BH40DL	BH25ST/EF BH50DL/EF	BH30ST/EF BH60DL/EF	BH35ST/EF BH70DL/EF	BH40ST/EF	BH45ST/EF	BH50ST/EF & BH55ST*
A	150	150	150	150	150	150	200	200
B	890	970	970	1020	1170	1220	1280	1330
C	1570	1650	1650	1780	1930	1970	2010	2080
D	890	970	970	1020	1170	1220	1280	1330

FIGURE 2: LINEAR & DOUBLE LINEAR, ONE SIDE REFLECTOR



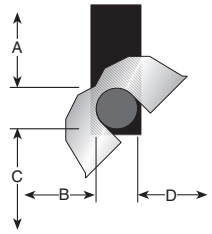
Model	BH15ST BH30DL	BH20ST BH40DL	BH25ST/EF BH50DL/EF	BH30ST/EF BH60DL/EF	BH35ST/EF BH70DL/EF	BH40ST/EF	BH45ST/EF	BH50ST/EF & BH55ST*
A	150	150	150	150	150	150	200	200
B	230	230	230	230	230	230	230	230
C	1580	1760	1760	1930	2090	2130	2160	2240
D	1200	1380	1380	1500	1660	1710	1760	1860

FIGURE 3: LINEAR & DOUBLE LINEAR, TWO SIDE REFLECTORS



Model	BH15ST BH30DL	BH20ST BH40DL	BH25ST/EF BH50DL/EF	BH30ST/EF BH60DL/EF	BH35ST/EF BH70DL/EF	BH40ST/EF	BH45ST/EF	BH50ST/EF & BH55ST*
A	150	150	150	150	150	150	200	200
B	590	640	640	690	820	860	890	1020
C	1660	1810	1810	1960	2110	2160	2210	2320
D	590	640	640	690	820	860	890	1020

FIGURE 4: LINEAR & DOUBLE LINEAR, 45° MOUNT

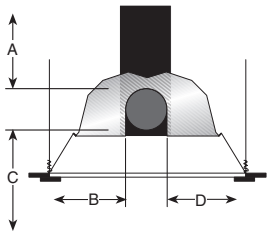


Model	BH15ST BH30DL	BH20ST BH40DL	BH25ST/EF BH50DL/EF	BH30ST/EF BH60DL/EF	BH35ST/EF BH70DL/EF	BH40ST/EF	BH45ST/EF	BH50ST/EF & BH55ST*
A	200	200	200	250	250	275	300	300
B	200	200	200	200	200	200	200	200
C	1500	1660	1660	1860	1960	2030	2110	2160
D	1370	1520	1520	1630	1750	1820	1880	2000

* BH55ST only available in multiburner.

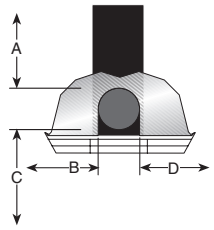
NOTE:
1. All dimensions are from the surfaces of all tubes, couplings, tees, elbows and crosses.
2. Clearances B, C and D can be reduced by 50% after 7.5 m of tubing downstream from the burner.
3. All measurements are in millimeters.

FIGURE 5: LINEAR & DOUBLE LINEAR, 1 FOOT AND 2 FOOT DECO GRILLE



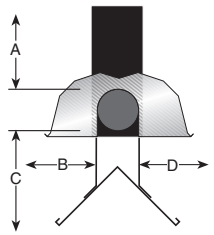
Model	BH15ST BH30DL	BH20ST BH40DL	BH25ST/EF BH50DL/EF	BH30ST/EF BH60DL/EF	BH35ST/EF BH70DL/EF	BH40ST/EF	BH45ST/EF	BH50ST/EF & BH55ST*
A	150	150	150	150	150	150	200	200
B	890	970	970	1020	1170	1220	1280	1330
C	1570	1650	1650	1780	1930	1970	2010	2080
D	890	970	970	1020	1170	1220	1280	1330

FIGURE 6: LINEAR & DOUBLE LINEAR, PROTECTIVE GRILLE



Model	BH15ST BH30DL	BH20ST BH40DL	BH25ST/EF BH50DL/EF	BH30ST/EF BH60DL/EF	BH35ST/EF BH70DL/EF	BH40ST/EF	BH45ST/EF	BH50ST/EF & BH55ST*
A	150	150	150	150	150	150	200	200
B	890	970	970	1020	1170	1220	1280	1330
C	1570	1650	1650	1780	1930	1970	2010	2080
D	890	970	970	1020	1170	1220	1280	1330

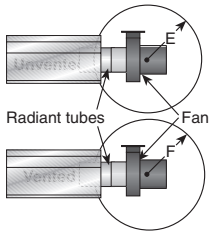
FIGURE 7: UNDERSHIELD **



Model	BH15ST BH30DL	BH20ST BH40DL	BH25ST/EF BH50DL/EF	BH30ST/EF BH60DL/EF	BH35ST/EF BH70DL/EF	BH40ST/EF	BH45ST/EF	BH50ST/EF & BH55ST*
A	150	150	150	150	150	150	-	-
B	990	1020	1270	1270	1370	1400	-	-
C	840	965	1120	1120	1220	1270	-	-
D	990	1020	1270	1270	1370	1400	-	-

** When installed in the first 3 m - Not for use on EF models.

FIGURE 8: LINEAR & DOUBLE LINEAR, VENTING



Model	BH15ST BH30DL	BH20ST BH40DL	BH25ST/EF BH50DL/EF	BH30ST/EF BH60DL/EF	BH35ST/EF BH70DL/EF	BH40ST/EF	BH45ST/EF	BH50ST/EF & BH55ST*
E	1000	1000	1000	1000	1000	1000	1000	1000
F	500	500	500	500	500	500	500	500

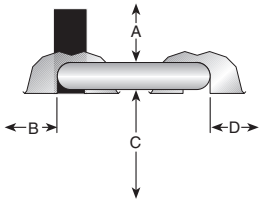
* BH55ST only available in multiburner.

3.3 Clearance Data -U Tube

NOTE:
1. All dimensions are from the surfaces of all tubes, couplings, tees, elbows and crosses.
2. Clearances B, C and D can be reduced by 50% after 7.5 m of tubing downstream from the burner.
3. All measurements are in millimeters.
4. Add 6 cm clearance to uncovered U-tube.

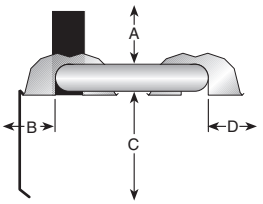
.

FIGURE 9: U-TUBE, HORIZONTAL MOUNT



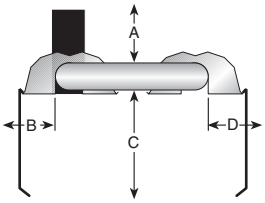
Model	BH15UT	BH20UT	BH25UT/EF	BH30UT/EF	BH35UT/EF	BH40UT/EF	BH45UT/EF	BH50UT/EF
A	150	150	150	150	150	150	200	200
B	890	970	970	1020	1170	1220	1270	1380
C	1580	1730	1730	1910	1980	2050	2110	2210
D	760	940	940	1000	1090	1150	1200	1300

FIGURE 10: U-TUBE, ONE SIDE REFLECTOR



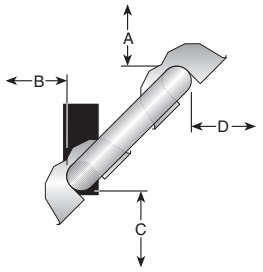
Model	BH15UT	BH20UT	BH25UT/EF	BH30UT/EF	BH35UT/EF	BH40UT/EF	BH45UT/EF	BH50UT/EF
A	150	150	150	150	150	150	200	200
B	230	230	230	230	230	230	230	230
C	1580	1760	1760	1930	2090	2130	2160	2240
D	1200	1380	1380	1500	1660	1710	1760	1860

FIGURE 11: U-TUBE, TWO SIDE REFLECTORS



Model	BH15UT	BH20UT	BH25UT/EF	BH30UT/EF	BH35UT/EF	BH40UT/EF	BH45UT/EF	BH50UT/EF
A	150	150	150	150	150	150	200	200
B	590	640	640	690	820	860	890	1020
C	1660	1810	1810	1960	2110	2160	2210	2320
D	590	640	640	690	820	860	890	1020

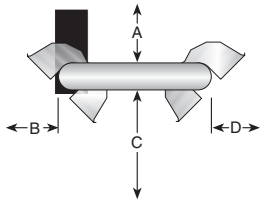
FIGURE 12: U-TUBE, FULL 45° MOUNT



Model	BH15UT	BH20UT	BH25UT/EF	BH30UT/EF	BH35UT/EF	BH40UT/EF	BH45UT/EF	BH50UT/EF
A	200	200	200	200	200	200	200	200
B	200	200	200	200	200	200	200	200
C	1500	1650	1650	1860	1960	2040	2110	2160
D	1070	1170	1170	1320	1550	1620	1680	1780

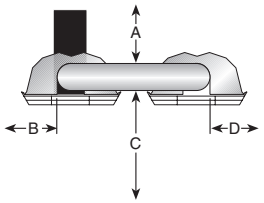
NOTE:
1. All dimensions are from the surfaces of all tubes, couplings, tees, elbows and crosses.
2. Clearances B, C and D can be reduced by 50% after 7.5 m of tubing downstream from the burner.
3. All measurements are in millimeters.
4. Add 6 cm clearance to uncovered U-tube.

FIGURE 13: U-TUBE, OPPOSITE 45° TILT



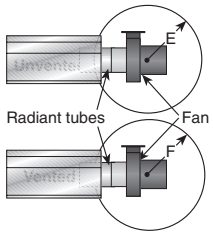
Model	BH15UT	BH20UT	BH25UT/EF	BH30UT/EF	BH35UT/EF	BH40UT/EF	BH45UT/EF	BH50UT/EF
A	200	200	200	250	250	275	300	300
B	1370	1530	1530	1630	1780	1830	1880	1930
C	1500	1650	1650	1860	1960	2040	2110	2160
D	560	560	560	560	560	560	560	560

FIGURE 14: U-TUBE, PROTECTIVE GRILLE



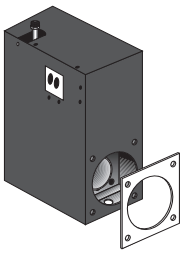
Model	BH15UT	BH20UT	BH25UT/EF	BH30UT/EF	BH35UT/EF	BH40UT/EF	BH45UT/EF	BH50UT/EF
A	150	150	150	150	150	150	200	200
B	890	970	970	1020	1170	1220	1270	1380
C	1580	1730	1730	1910	1980	2050	2110	2210
D	760	940	940	1000	1090	1150	1200	1300

FIGURE 15: U-TUBE, VENTING



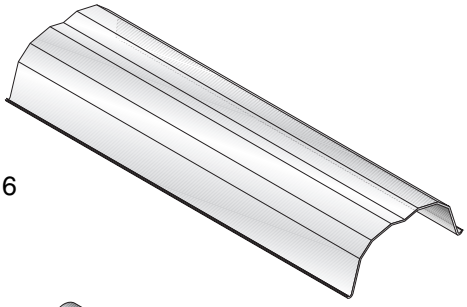
Model	BH15UT	BH20UT	BH25UT/EF	BH30UT/EF	BH35UT/EF	BH40UT/EF	BH45UT/EF	BH50UT/EF
E	1000	1000	1000	1000	1000	1000	1000	1000
F	500	500	500	500	500	500	500	500

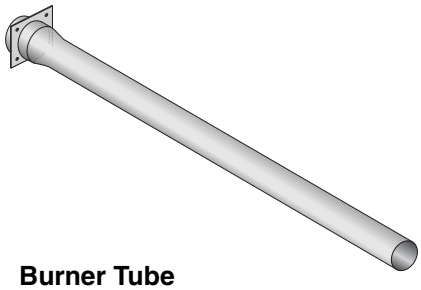
SECTION 4: MAJOR COMPONENT DESCRIPTIONS



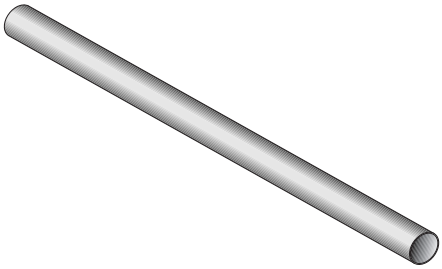
Burner (shown with Tube Gasket)
Must be installed with the flame observation window facing down.

Reflector (Aluminium or Stainless Steel)
Alternate overlap as shown on overview. Minimum overlap is 16 cm.

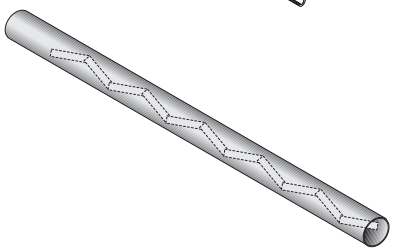




Burner Tube
Supplied in 3 m lengths. Burner tube is always the first tube after the burner.

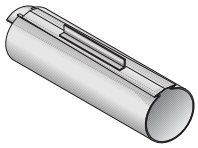


Tube
Heat treated aluminised tube supplied in 3 m lengths.

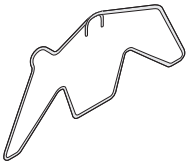


Fan Tube with Internal Swirler
Supplied in 3 m lengths. Fan tube is always the last tube on the heater where the fan is attached.
The swirler is welded to the inside of the tube end.

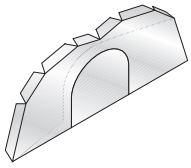
Tube and Reflector Hanger with Clamp Package
Position this hanger no more than 10 cm away from the burner assembly.



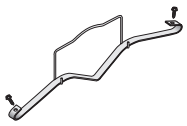
Coupling Assembly with Lock



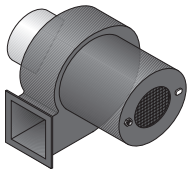
Tube and Reflector Hanger
Suspend system from these hangers.



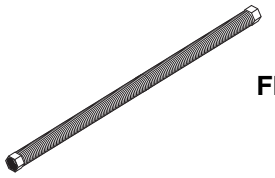
Reflector End Cap
Punch out center section to accommodate heat exchanger tube.



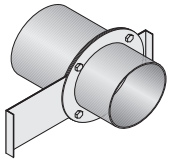
Reflector Support Strap, Wire Form & #8 x 3/4 (3.9 x 19mm) Screw



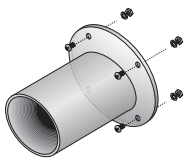
Fan Assembly (Includes Flange)
Fan Assembly is attached to the last section of heat exchanger tubing (Fan Tube).



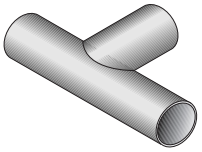
Flex Gas Line



Damper Flange Assembly
For use on Multiburner Systems.

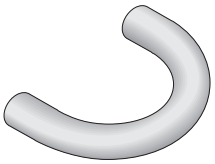


Fan Flange Assembly and Screws

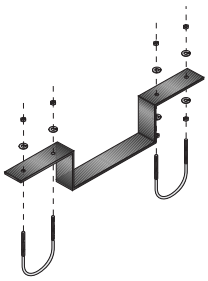


Tee Assembly

Height Adjuster



U-Tube Assembly



U-Tube Support Bracket

Bow Shackle

SECTION 5: GENERAL SUSPENSION DETAILS

⚠ WARNING

Crush Hazard

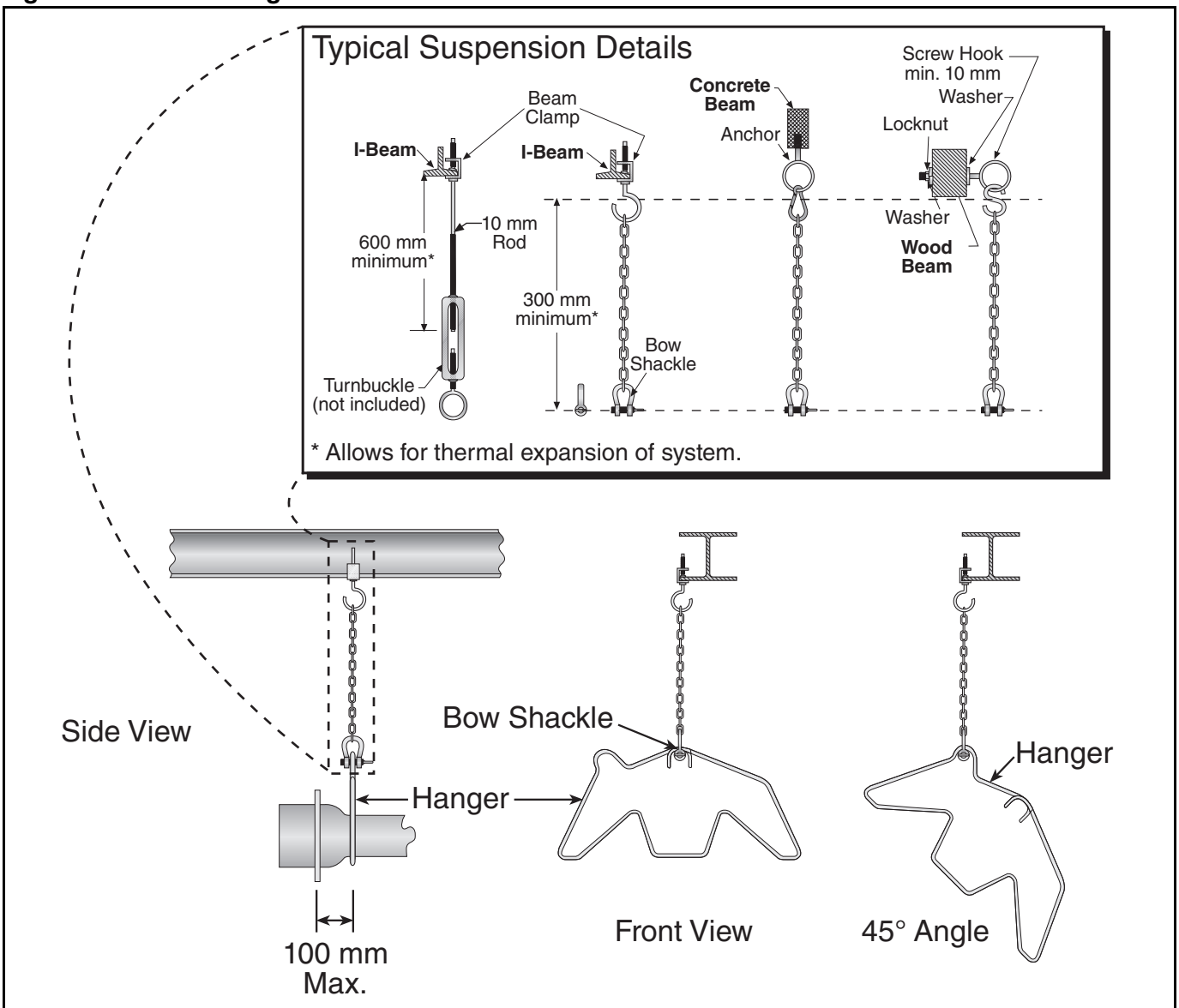
Hang heater with materials with a minimum working load of 33 kg (75 lbs).

Failure of the supports can result in death, injury or property damage.

To ensure your safety, and comply with the terms of the warranty, all units must be installed in accordance with these instructions.

The gas or the electrical supply lines must not be used to support the heater.
Do not locate the gas or electric supply lines directly over the path of the flue products from the heater.
The heater must be installed in a location that it is readily accessible for servicing.
The heaters must be installed with clearances to combustibles as indicated on the rating plate and in this manual.
The minimum and maximum gas inlet pressures must be maintained as indicated on the rating plate.Typical installation configurations are shown in *Figure 16*.

Figure 16: Critical Hanger Placement



Description	Part Number
Burner Tube	03051100
Bow Shackle	E0007576
Tube/Reflector Hanger	03090100

SECTION 6: LINEAR & DOUBLE LINEAR HEATER INSTALLATION

The figures in this section provide a general overview of component placement in a RADIANT SERVICES™ Linear and Double Linear system. The location of some components such as supports and couplings is crucial for proper installation. Assemble the heater components as shown *on Page 10, Figure 17*.

For optional reflector configurations for linear heaters *see Page 3, Figure 1 through Page 4, Figure 8*. Install appropriate suspension hardware, beam clamps, chain or rod at predetermined locations. Adjustments of chain length will provide uniform pitch.

If any step is unclear, please contact Radiant Services at +44 (0) 121 556 4495.

6.1 Linear Standard Parts List

Part No.	Description	BH15ST	BH20ST	BH25ST BH25ST/EF	BH30ST BH30ST/EF	BH35ST BH35ST/EF	BH40ST BH40ST/EF	BH45ST BH45ST/EF	BH50ST BH50ST/EF	BH55ST
	RADIANT SERVICES™ Burner Assembly (Input and Fuel Varies)	1	1	1	1	1	1	1	1	1
07260001	Fan Package XP 1	1	1	1	1	-	-	-	-	-
07260002	Fan Package XP 2	-	-	-	-	1	1	1	-	-
07260003	Fan Package XP 3	-	-	-	-	-	-	-	1	-
03051100	Burner Tube, 100 mm x 3048 mm	1	1	1	1	1	1	1	1	1
91409408	Tube, 100 mm x 3048 mm	-	1	1	2	2	2	3	3	4
S5127W	Fan Tube, 100 mm x 3048 mm, with 3048 mm Swirler	-	1	1	1	1	1	1	1	1
S5134W	Fan Tube, 100 mm x 3048 mm, with 2134 mm Swirler	1	-	-	-	-	-	-	-	-
01329600	Standard Coupling Assembly	1	2	2	3	3	3	4	4	5
01329700	Coupling Lock	1	2	2	3	3	3	4	4	5
02750303	Reflector, Aluminium, 2439 mm	3	4	4	6	6	6	7	7	8
027503SS	Reflector, Stainless Steel, 2439 mm (Optional)*	3	4	4	6	6	6	7	7	8
02750800	Reflector End Cap, Aluminium	2	2	2	2	2	2	2	2	2
027508SH	Reflector End Cap, Stainless (Optional)*	2	2	2	2	2	2	2	2	2
03090100	Tube and Reflector Hanger	3	4	4	5	5	5	6	6	7
01318901	Tube Clamp Package (including Nut, Washer & Bolt)	1	1	1	1	1	1	1	1	1
91908004	Wire Form	2	3	3	5	5	5	6	6	7
94320812	Screw #8 x 3/4 (3.9mm x 19mm), (goes with 03050000)	4	6	6	10	10	10	12	12	14
03050000	Reflector Support Strap	2	3	3	5	5	5	6	6	7
E0007576	Bow Shackle	3	4	4	5	5	5	6	6	7
91107720	U-Clip Package (20 Pieces)	1	1	1	1	1	1	1	1	1
S7199K	Damper Flange Assembly (For use on Multiburner Systems)	1 Per Heater								

** PVC coating must be removed prior to installation.*

Figure 17: RADIANT SERVICES™ Linear General Assembly Overview

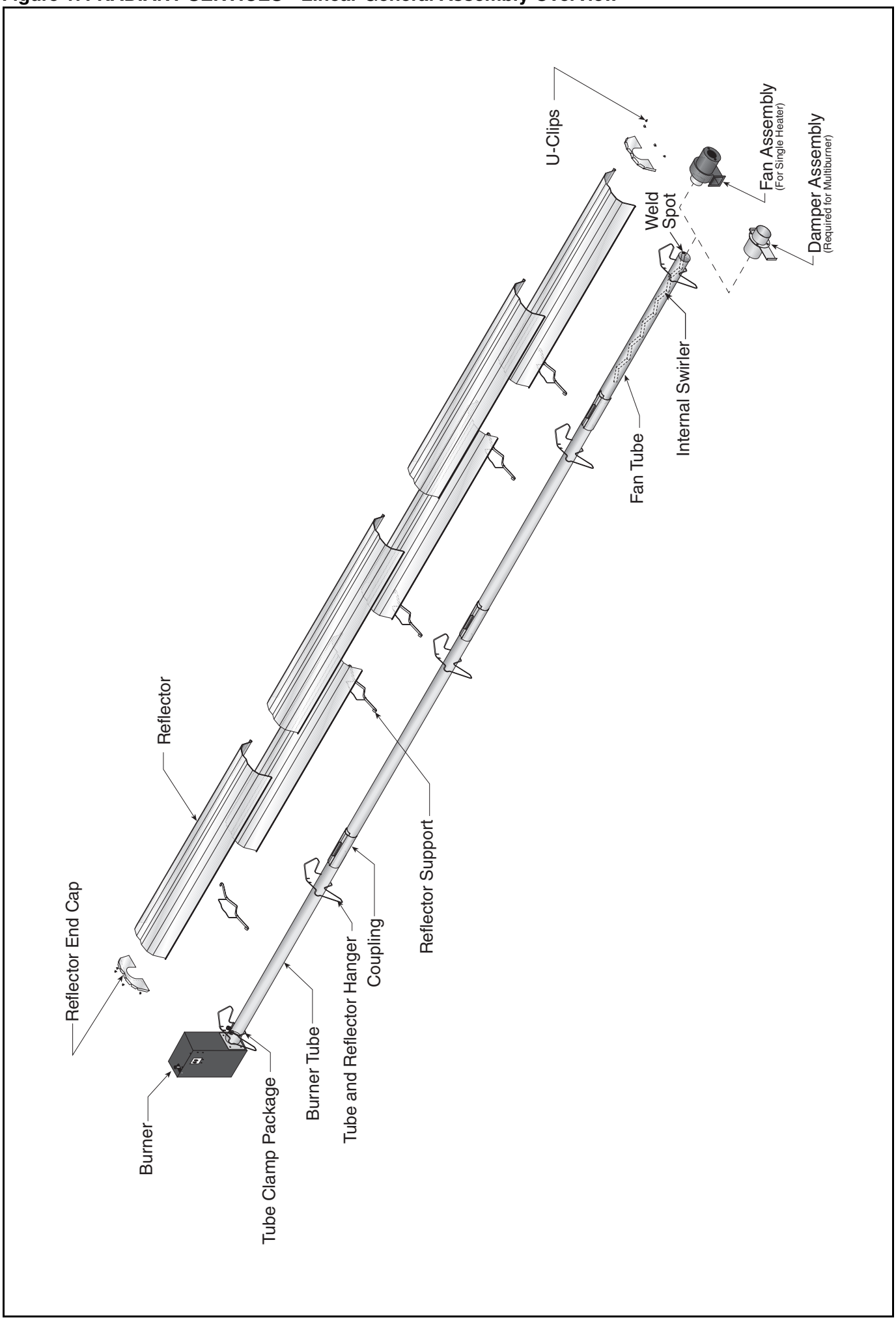
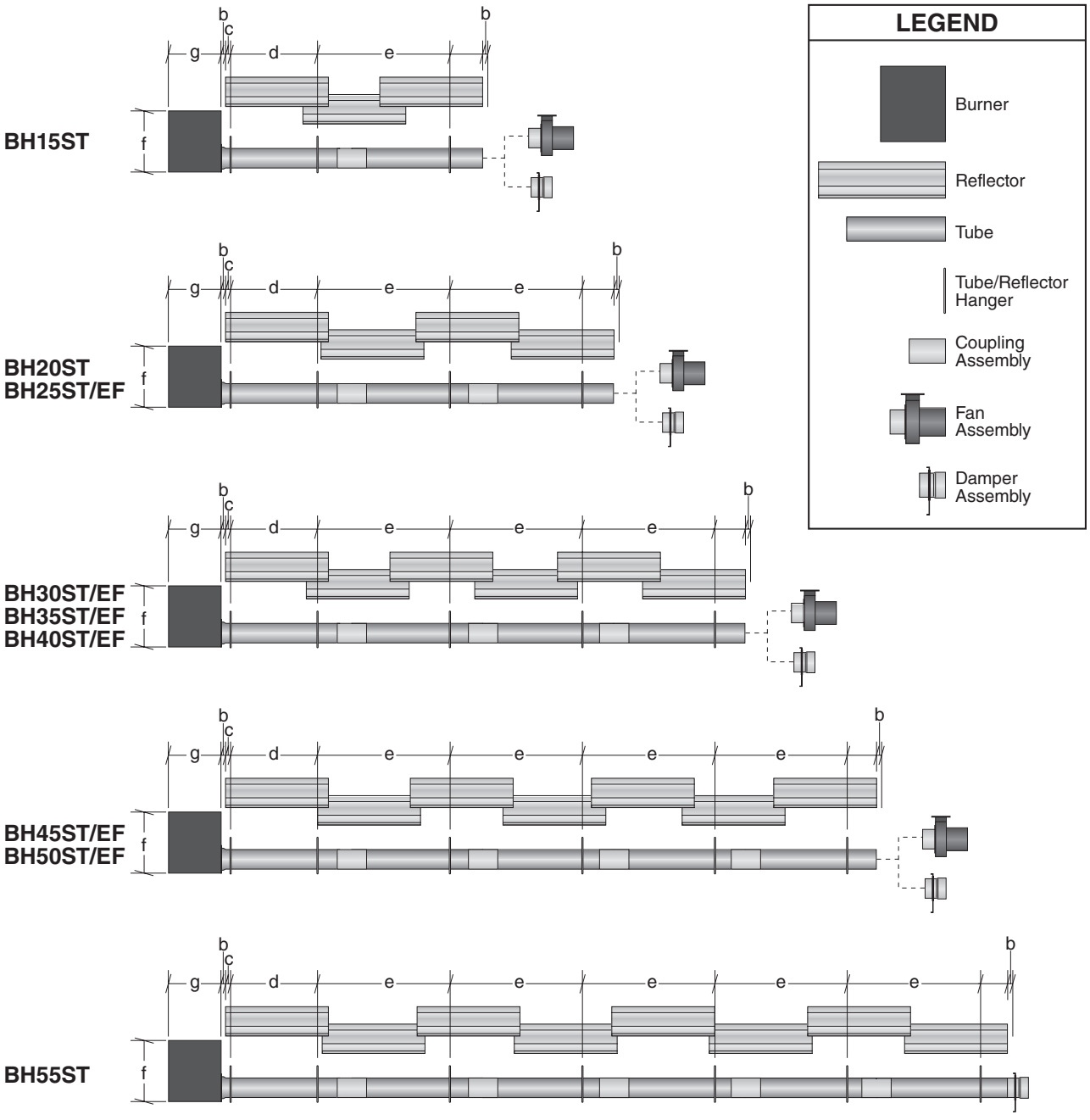


Figure 18: RADIANT SERVICES™ Linear Layout Overviews



a = reflector width (not shown) - 365 mm
b = end cap to burner/fan - 50 mm
c = end cap to hanger - 50 mm
d = distance first hanger - 2290 mm
e = distance typical between hangers - 3050 mm
f = burner height - 366 mm
g = burner length - 291 mm

Model	BH15ST	BH20ST	BH25ST/EF	BH30ST/EF	BH35ST/EF	BH40ST/EF	BH45ST/EF	BH50ST/EF	BH55ST
Reflector Overlap (approx.)	700 mm	250 mm	250 mm	530 mm	530 mm	530 mm	330 mm	330 mm	200 mm

6.2 Double Linear Standard Parts List

Part No.	Description	BH30DL	BH40DL	BH50DL BH50DL/EF	BH60DL BH60DL/EF	BH70DL BH70DL/EF
	RADIANT SERVICES™ Burner Assembly (Input and Fuel Varies)	2	2	2	2	2
07260002	Fan Package XP 2	1	1	-	-	-
07260003	Fan Package XP 3	-	-	1	1	1
03051100	Burner Tube, 100 mm x 3048 mm	2	2	2	2	2
91409408	Tube, 100 mm x 3048 mm	-	2	2	4	4
S5127W	Fan Tube, 100 mm x 3048 mm, with 3048 mm Swirler	-	2	2	2	2
S5134W	Fan Tube, 100 mm x 3048 mm, with 2134 mm Swirler	2	-	-	-	-
E0009170	Tee, 100 mm x 100 mm x 100 mm	1	1	1	1	1
01329600	Standard Coupling Assembly	4	6	6	8	8
01329700	Coupling Lock	4	6	6	8	8
02750303	Reflector, Aluminium, 2439 mm	6	8	8	12	12
027503SS	Reflector, Stainless Steel, 2439 mm (Optional)*	6	8	8	12	12
02750800	Reflector End Cap, Aluminium	4	4	4	4	4
027508SH	Reflector End Cap, Stainless (Optional)*	4	4	4	4	4
03090100	Tube and Reflector Hanger	6	8	8	10	10
01318901	Tube Clamp Package (including Nut, Washer & Bolt)	2	2	2	2	2
91908004	Wire Form	4	6	6	10	10
03050000	Reflector Support Strap	4	6	6	10	10
E0007576	Bow Shackle	6	8	8	10	10
91107720	U-Clip Package (20 Pieces)	2	2	2	2	2
E0007582	Height Adjuster	6	8	8	10	10
94320812	Screw #8 x 3/4 (3.9mm x 19mm), (goes with 03050000)	8	12	12	20	20

** PVC coating must be removed prior to installation.*

Figure 19: RADIANT SERVICES™ Double Linear General Assembly Overview

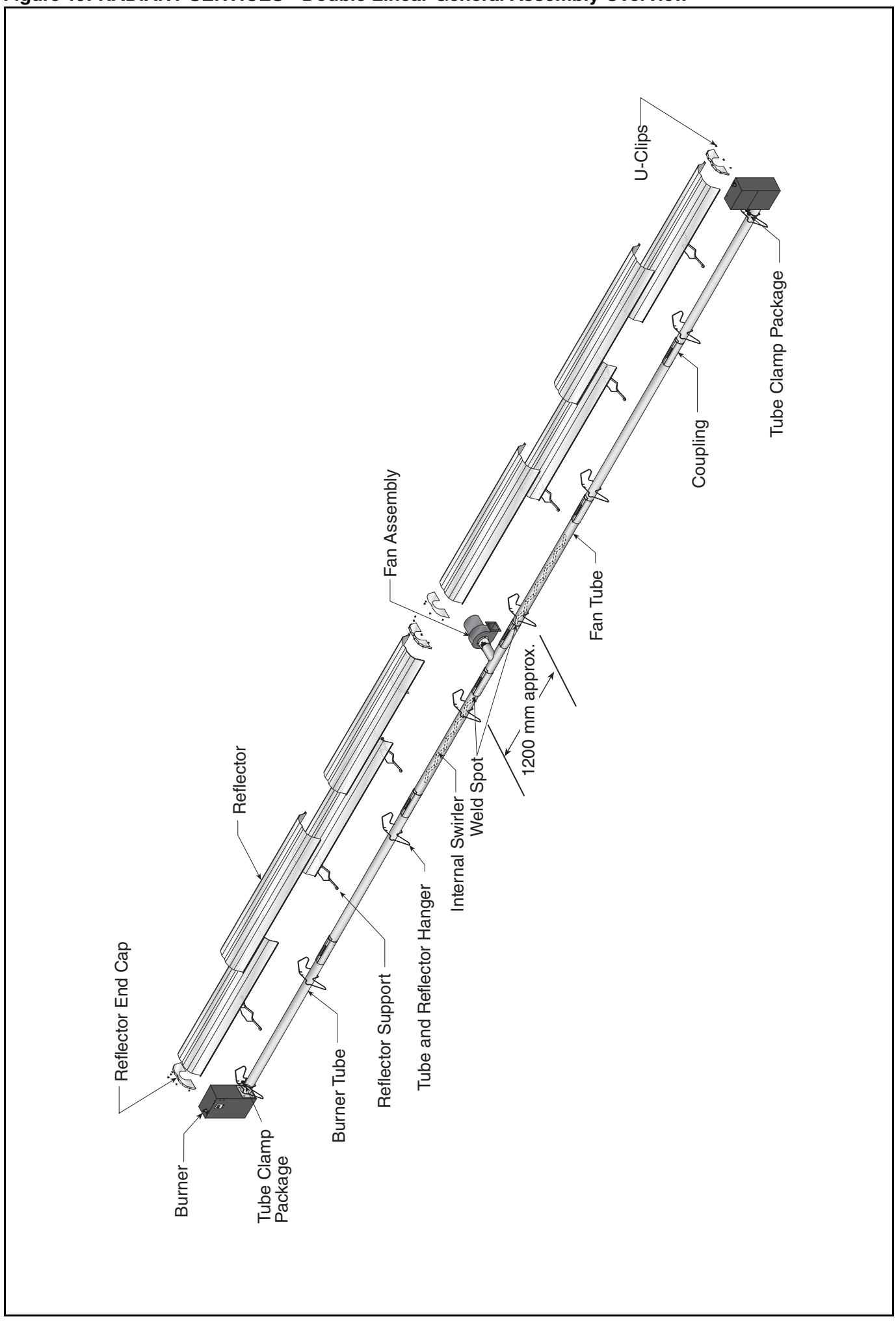
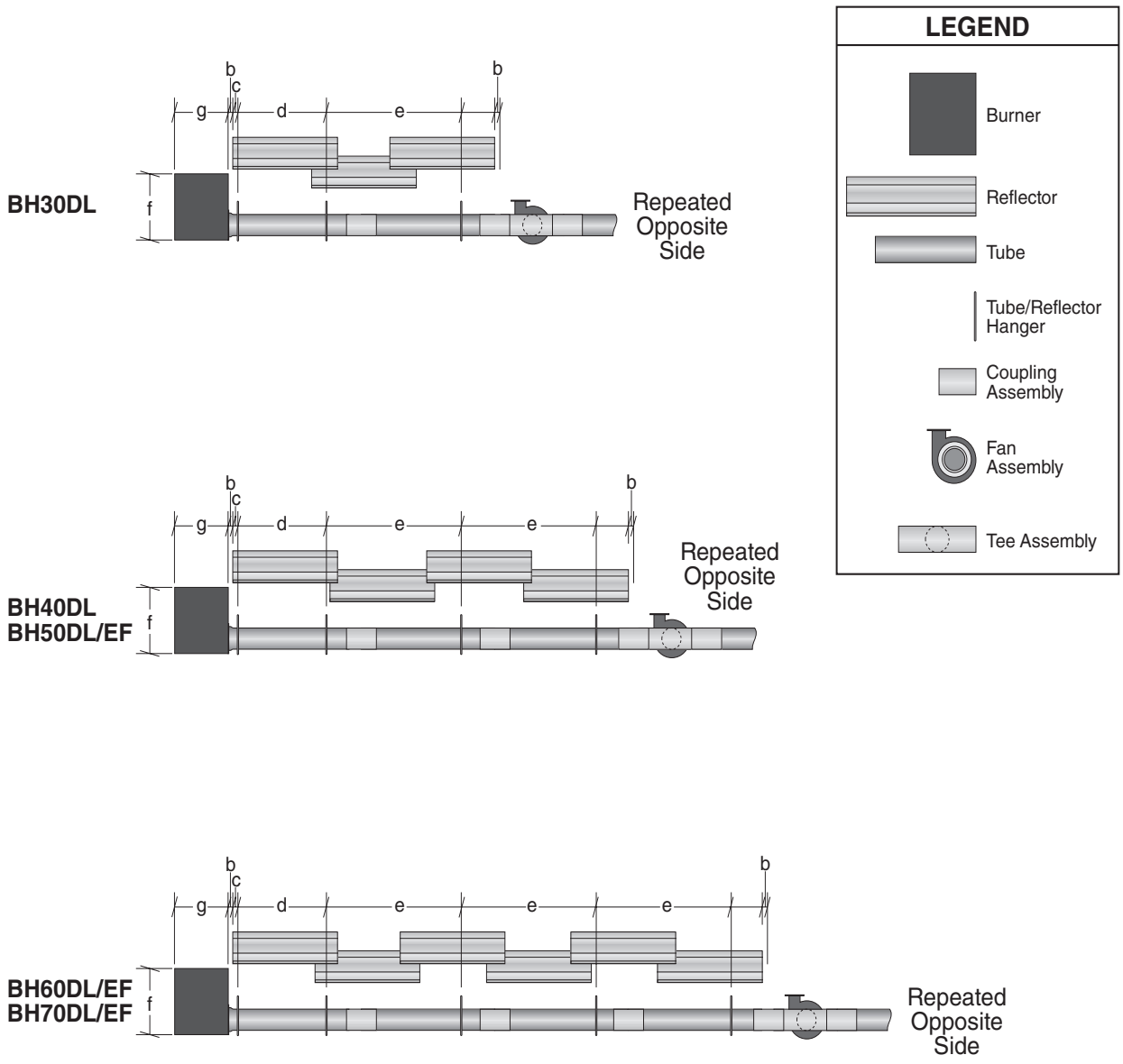


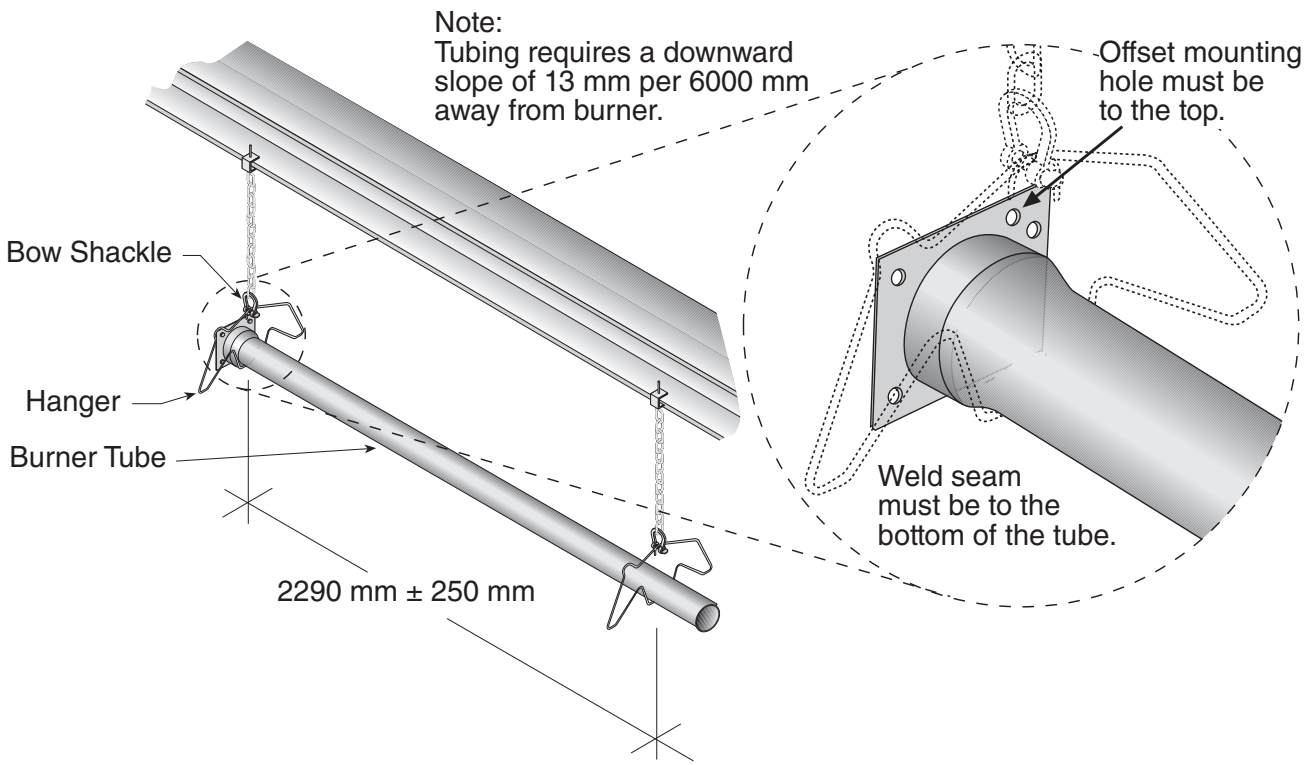
Figure 20: RADIANT SERVICES™ Double Linear Layout Overviews



a = reflector width (not shown) - 365 mm
b = end cap to burner/fan - 50 mm
c = end cap to hanger - 50 mm
d = distance first hanger - 2290 mm
e = distance typical between hangers - 3050 mm
f = burner height - 366 mm
g = burner length - 291 mm

Model	BH30DL	BH40DL	BH50DL/EF	BH60DL/EF	BH70DL/EF
Reflector Overlap (approx.)	700 mm	250 mm	250 mm	530 mm	530 mm

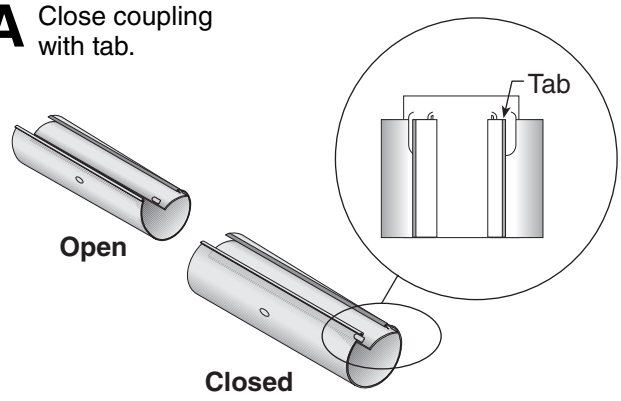
Step 6.3 Burner Tube Installation


Note:
Tubing requires a downward slope of 13 mm per 6000 mm away from burner.
Offset mounting hole must be to the top.
Bow Shackle
Hanger
Burner Tube
Weld seam must be to the bottom of the tube.
2290 mm ± 250 mm

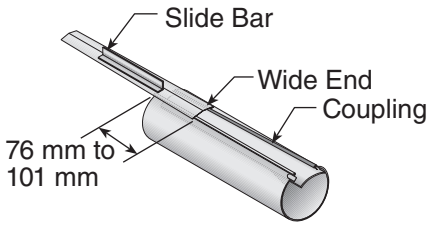
Description	Part Number
Burner Tube	03051100
Bow Shackle	E0007576
Tube/Reflector Hanger	03090100

Step 6.4 Coupling and Tube Assembly

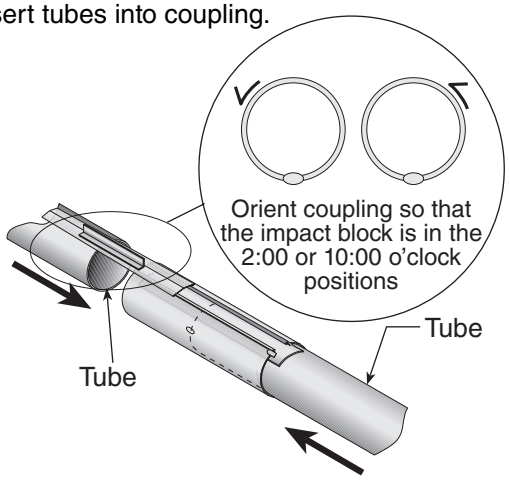
A Close coupling with tab.



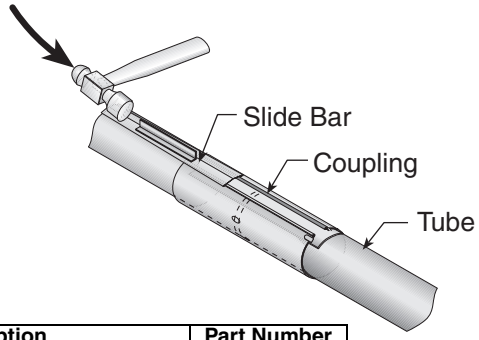
B Start slide bar/coupling lock onto coupling.



C Insert tubes into coupling.



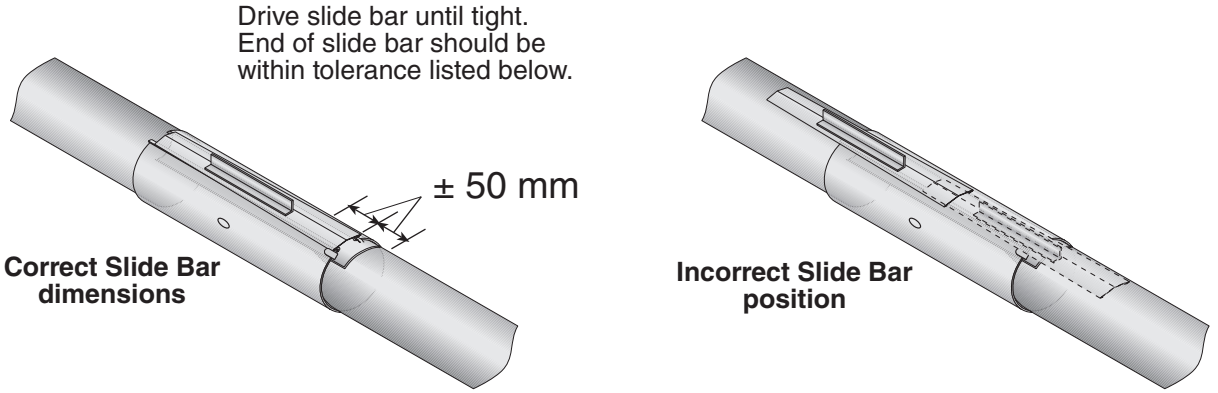
D Tighten coupling to join tubes.



Description	Part Number
Coupling	01329600
Slide Bar/Coupling Lock	01329700
Tube	91409408

Step 6.4.1 Coupling and Tube Assembly (Continued)

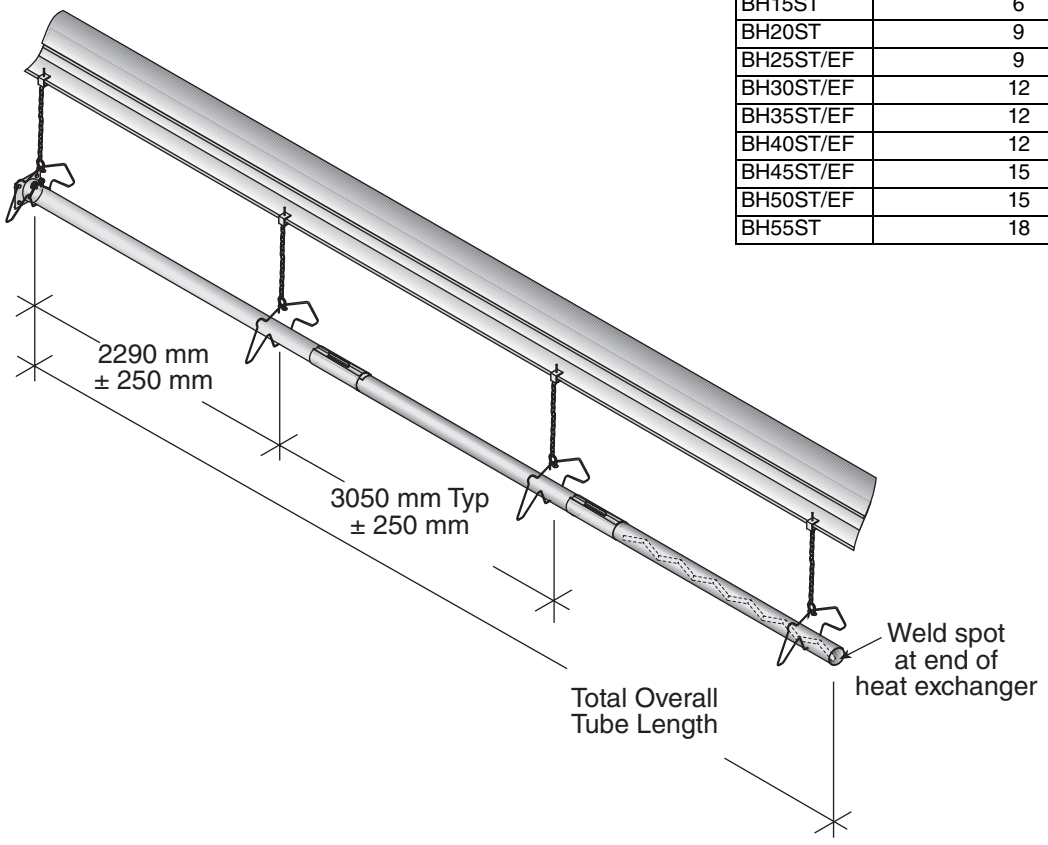
Tighten slide bar as shown below.



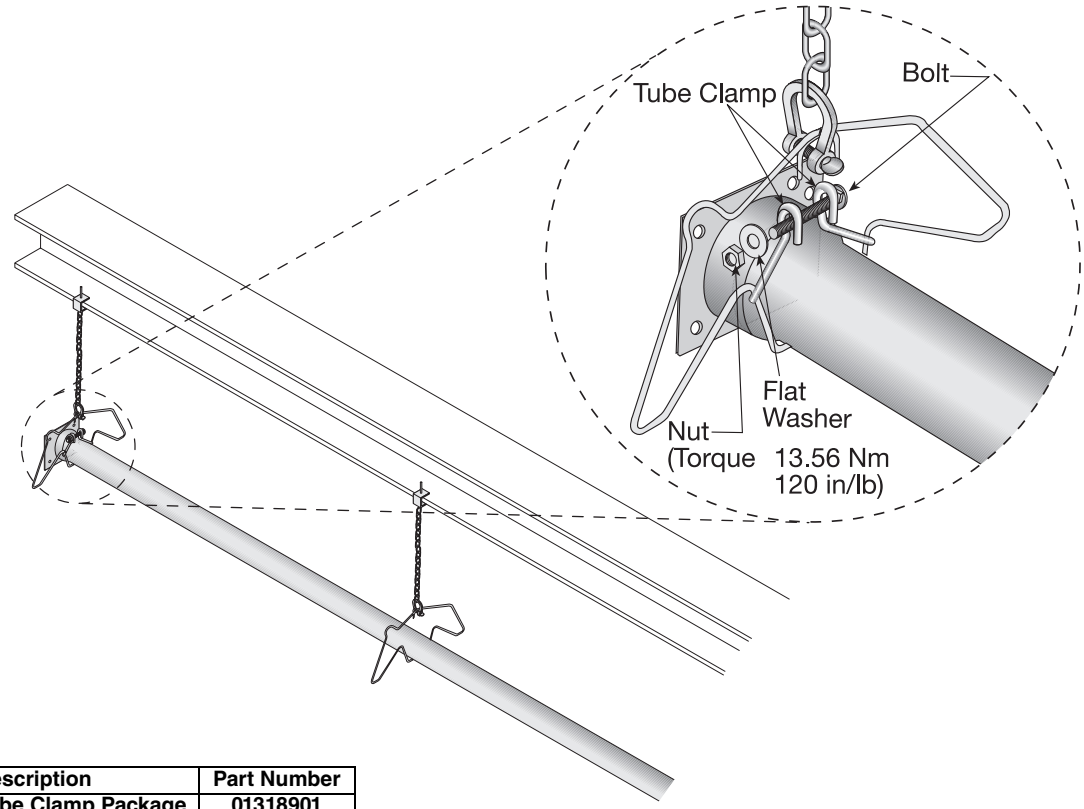
• Repeat *Step 6.4* A - D until all tubes are assembled. *See Page 16, Section 6.4.2* shown below.

Step 6.4.2 Coupling and Tube Assembly (Continued)

Model	Overall Tube Length (m)	Number of Tubes
BH15ST	6	2
BH20ST	9	3
BH25ST/EF	9	3
BH30ST/EF	12	4
BH35ST/EF	12	4
BH40ST/EF	12	4
BH45ST/EF	15	5
BH50ST/EF	15	5
BH55ST	18	6

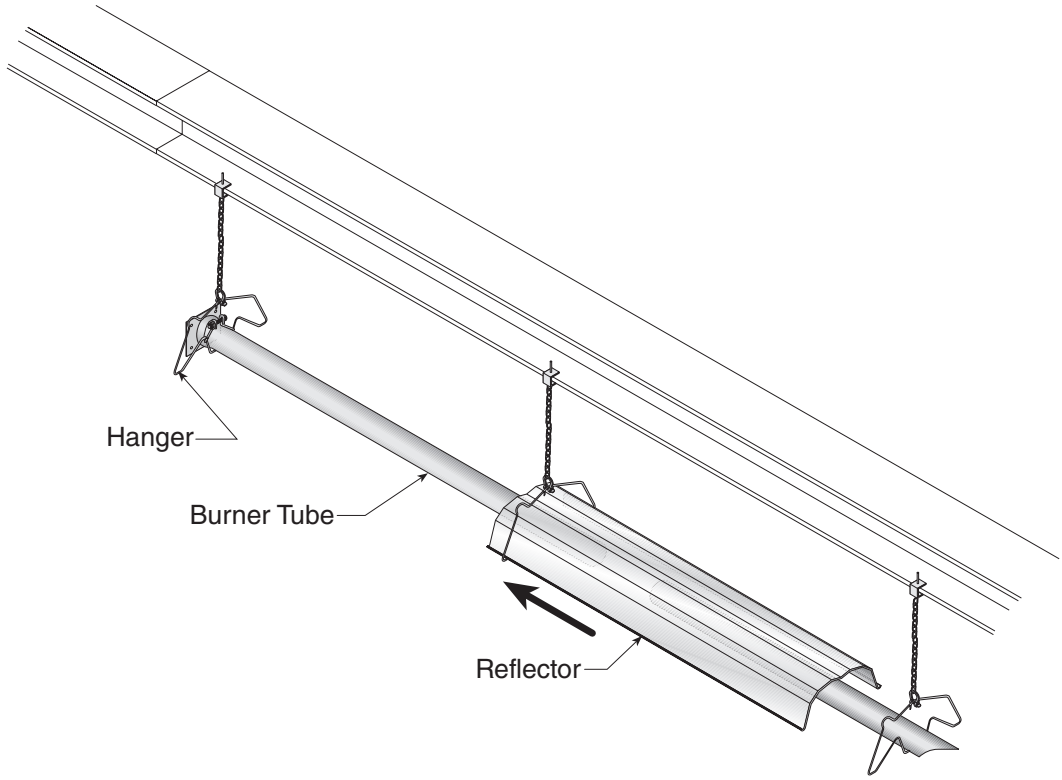


Step 6.5 Tube Clamp Package Installation



Description	Part Number
Tube Clamp Package	**01318901**
Tube Clamp	01396801
Bolt	97113940
Flat Washer	95211600
Nut	92113900

Step 6.6 Reflector Installation



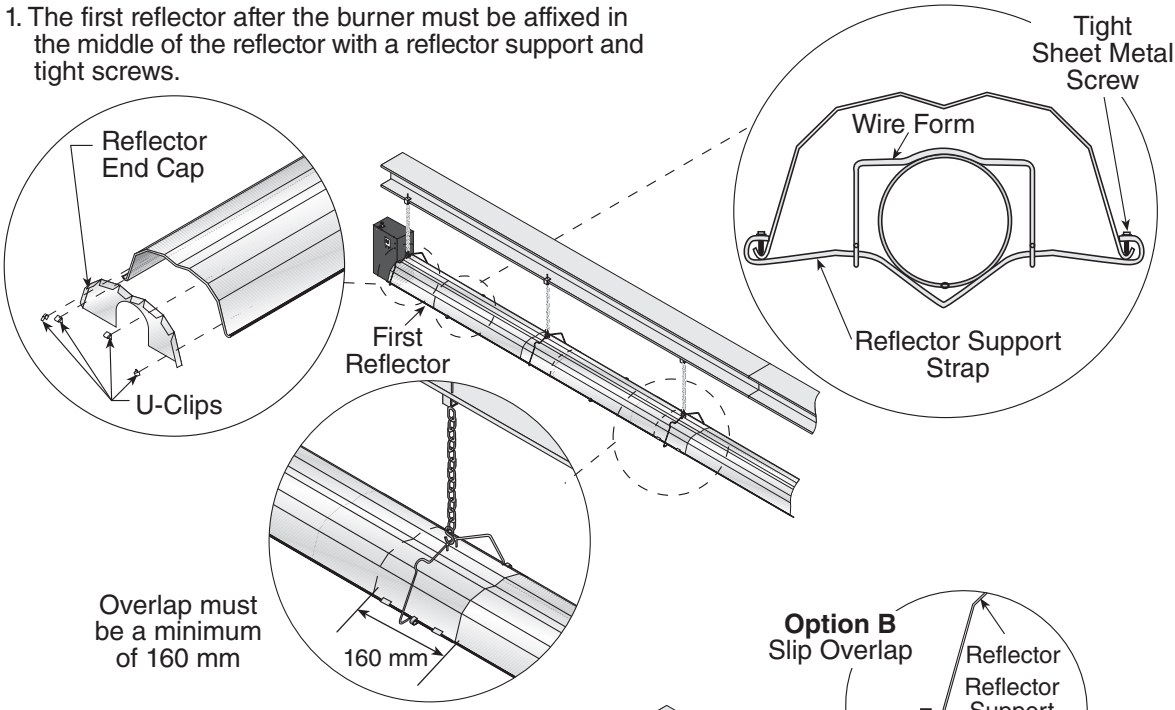
Description	Part Number
Tube/Reflector Hanger	03090100
Burner Tube	03051100
Reflector	02750303

Step 6.6.1 Reflector, U-Clip and Reflector Support Installation

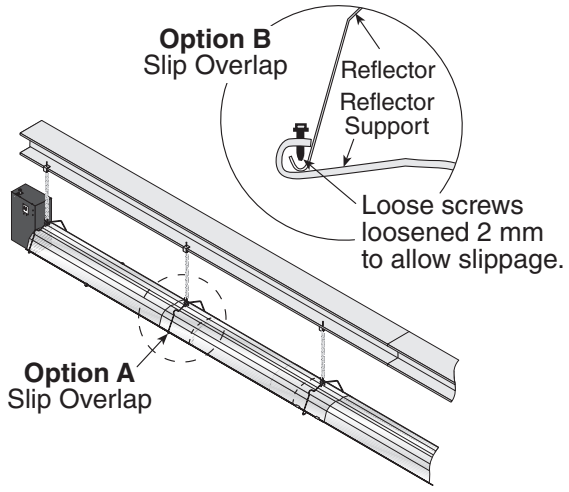
The pictorial drawings of the heater construction in *Section 6* are schematic only and provide a general guideline of where hangers, reflector supports and U-clips are to be installed.

To ensure proper expansion and contraction movement of the reflectors, a combination of U-clips and reflector supports are used. The positioning of reflector supports and U-clips depend on the individual installation. Use either pop rivets or sheet metal screws instead of U-clips when installing end caps and joint pieces in areas where impact and high wind may be a factor.The following rules must be observed:

1. The first reflector after the burner must be affixed in the middle of the reflector with a reflector support and tight screws.

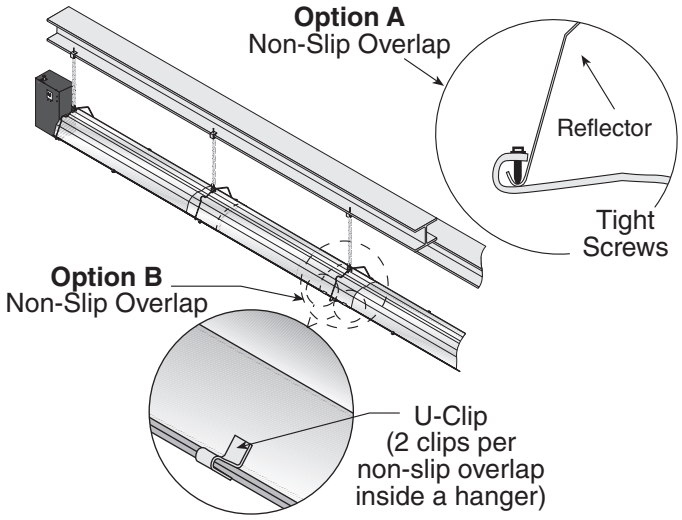


2. The overlap at the first and second reflector is a slip overlap. Thereafter, every third reflector joint is a slip overlap. A slip overlap is achieved by either:
   a.) both reflectors lay inside a hanger. (no reflector support needed).
   b.) using a reflector support with loose screws at the reflector overlap.



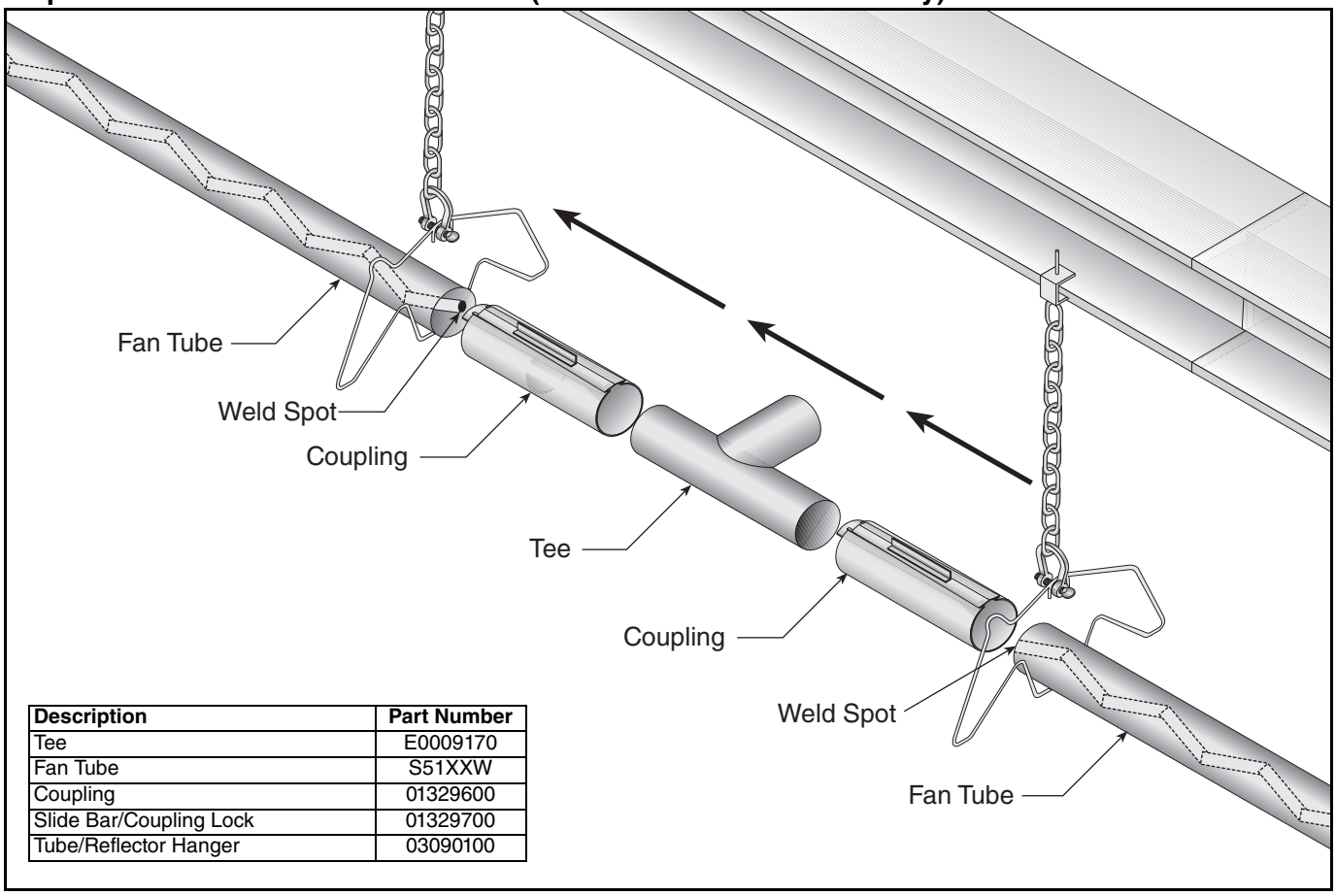
3. The remaining reflector overlaps require a non-slip overlap connection. To affix the reflectors together in a non-slip overlap either:
   a.) use reflector support and tight screws.
   b.) if both reflectors lay inside a hanger, u-clips or sheet metal screws may be used.

   This section of three reflectors joined together must be affixed to the tube with at least one reflector support with tight screws.



Description	Part Number
Reflector Support Package	**03050010**
Wire Form	91908004
Reflector Support Strap	03050000
Screw #8 x 3/4 (3.9 x 19mm)	94320812
U-Clip Package	91107720
Reflector End Cap	027508XX

Step 6.7 Double Linear Tee Installation (for double linear heaters only)



Description	Part Number
Tee	E0009170
Fan Tube	S51XXW
Coupling	01329600
Slide Bar/Coupling Lock	01329700
Tube/Reflector Hanger	03090100

SECTION 7: U-TUBE HEATER INSTALLATION

The figures in this section provide a general overview of component placement in a RADIANT SERVICES™ U-tube system. The location of some components such as supports and couplings is crucial for proper installation. Assemble the heater components as shown *on Page 21, Figure 21*.

For optional reflector configurations for U-tube heaters, *See Page 5, Figure 9 through Page 6, Figure 15*. Install appropriate suspension hardware, beam clamps, chain or rod at predetermined locations. Adjustments of chain length will provide uniform pitch.

If any step is unclear, please contact Radiant Services at +44 (0) 121 556 4495

7.1 U-Tube Standard Parts List

Part No.	Description	BH15UT	BH20UT	BH25UT BH25UT/EF	BH30UT BH30UT/EF	BH35UT BH35UT/EF	BH40UT BH40UT/EF	BH45UT BH45UT/EF	BH50UT BH50UT/EF
	RADIANT SERVICES™ Burner Assembly (Input and Fuel Varies)	1	1	1	1	1	1	1	1
07260001	Fan Package XP1	1	1	1	1	-	-	-	-
07260002	Fan Package XP2	-	-	-	-	1	1	1	-
07260003	Fan Package XP3	-	-	-	-	-	-	-	1
03051100	Burner Tube, 100 mm x 3048 mm	1	1	1	1	1	1	1	1
91409408	Tube, 100 mm x 3048 mm	-	-	-	2	2	2	2	2
91409423	Tube, 100 mm x 1524 mm	-	2	2	-	-	-	2	2
S5127W	Fan Tube, 100 mm x 3048 mm, with 3048 mm Swirler	-	1	1	1	1	1	1	1
S5134W	Fan Tube, 100 mm x 3048 mm, with 2134 mm Swirler	1	-	-	-	-	-	-	-
01335901	U-Bend	1	1	1	1	1	1	1	1
01329600	Standard Coupling Assembly	2	4	4	4	4	4	6	6
01329700	Coupling Lock	2	4	4	4	4	4	6	6
02750303	Reflector, Aluminium, 2439 mm	4	4	4	6	6	6	8	8
027503SS	Reflector, Stainless Steel, 2439 mm (Optional)*	4	4	4	6	6	6	8	8
02750800	Reflector End Cap, Aluminium	4	4	4	4	4	4	4	4
027508SH	Reflector End Cap, Stainless (Optional)*	4	4	4	4	4	4	4	4
03090100	Tube and Reflector Hanger	4	6	6	6	6	6	8	8
01318901	Tube Clamp Package (including Nut, Washer & Bolt)	1	1	1	1	1	1	1	1
91908004	Wire Form	2	4	4	4	4	4	6	6
03050000	Reflector Support Strap	2	4	4	4	4	4	6	6
03020501	U-Bend Support Bracket	1	1	1	1	1	1	1	1
E0007576	Bow Shackle	4	6	6	6	6	6	8	8
91107720	U-Clip Package (20 Pieces)	2	2	2	2	2	2	2	2
91912501	U-Bolt M6	2	2	2	2	2	2	2	2
C0090B	Nut M6	6	6	6	6	6	6	6	6
96411500	Lockwasher 6mm	6	6	6	6	6	6	6	6
94320812	Screw #8 x 3/4 (3.9mm x 19mm), (goes with 03050000)	4	8	8	8	8	8	12	12
S7199K	Damper Flange Assembly (For use on Multiburner Systems)	1 Per Heater							

**PVC coating must be removed prior to installation.*

Figure 21: RADIANT SERVICES™ U-Tube Assembly Overview

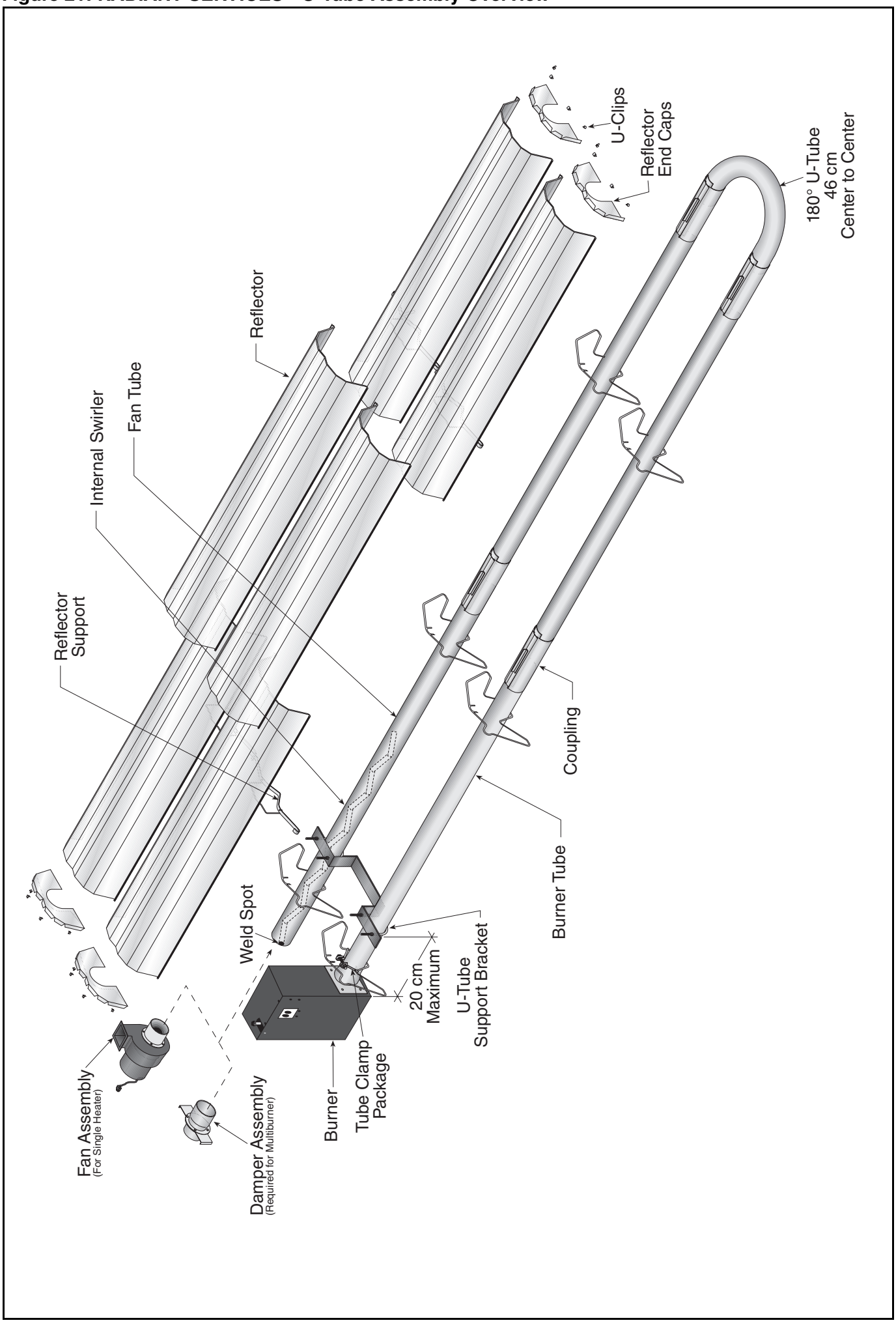
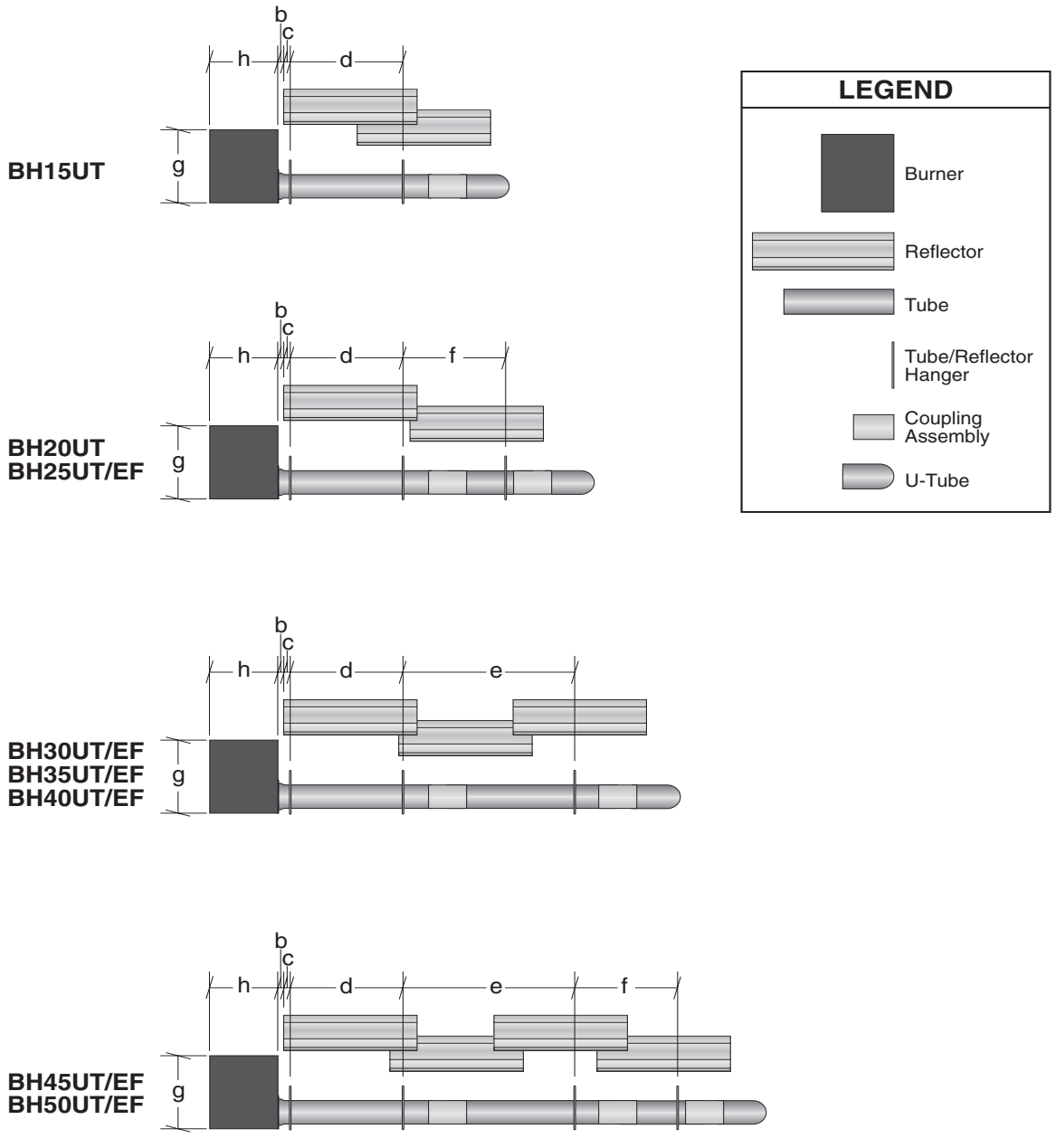


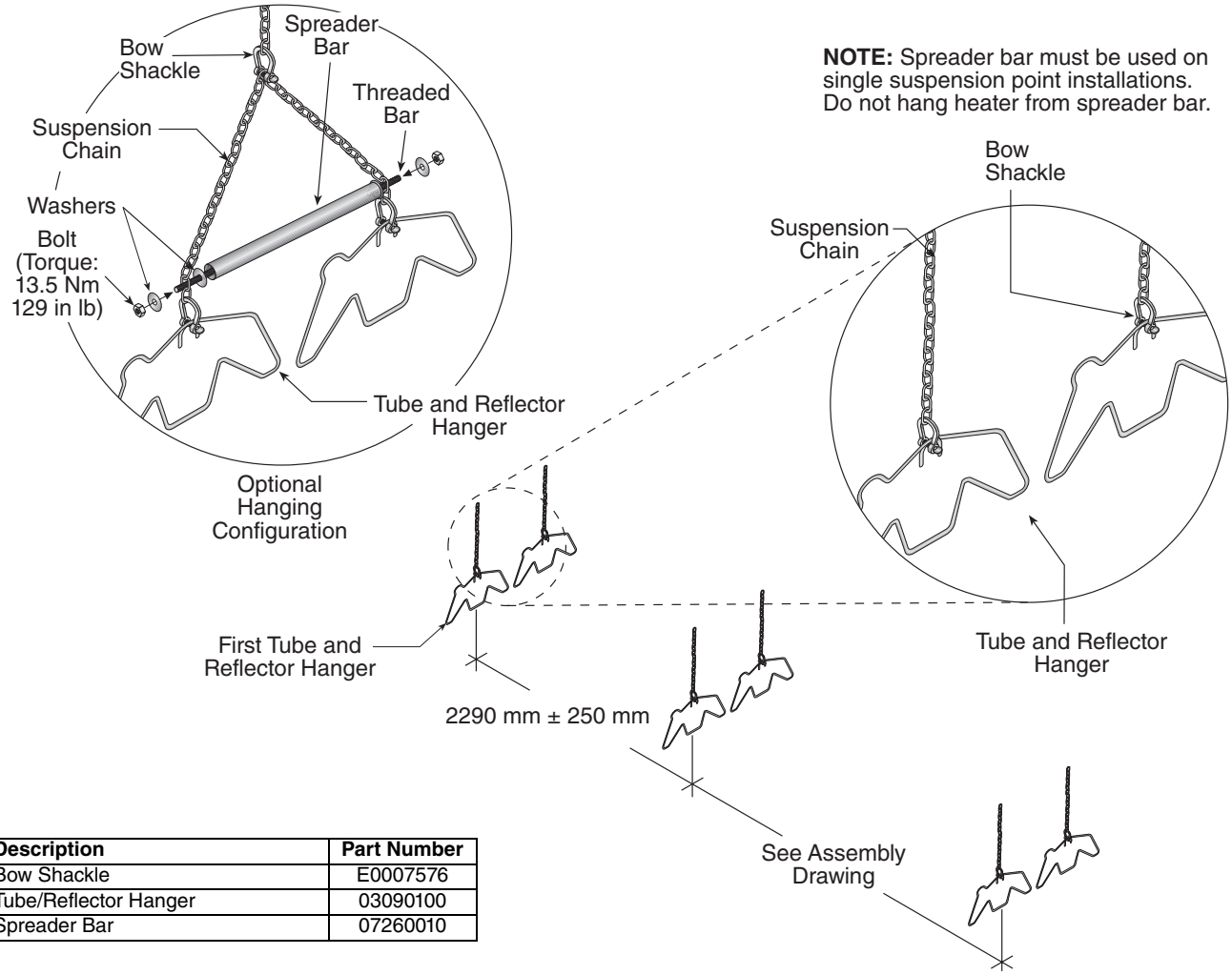
Figure 22: RADIANT SERVICES™ U-Tube Layout Overviews



a = overall width (not shown) - 850 mm
b = end cap to burner/fan - 50 mm
c = end cap to hanger - 50 mm
d = distance first hanger - 2290 mm
e = distance typical between hangers - 3050 mm
f = distance between last full tube hanger and half tube hanger - 1900 mm
g = burner height - 366 mm
h = burner length - 291 mm

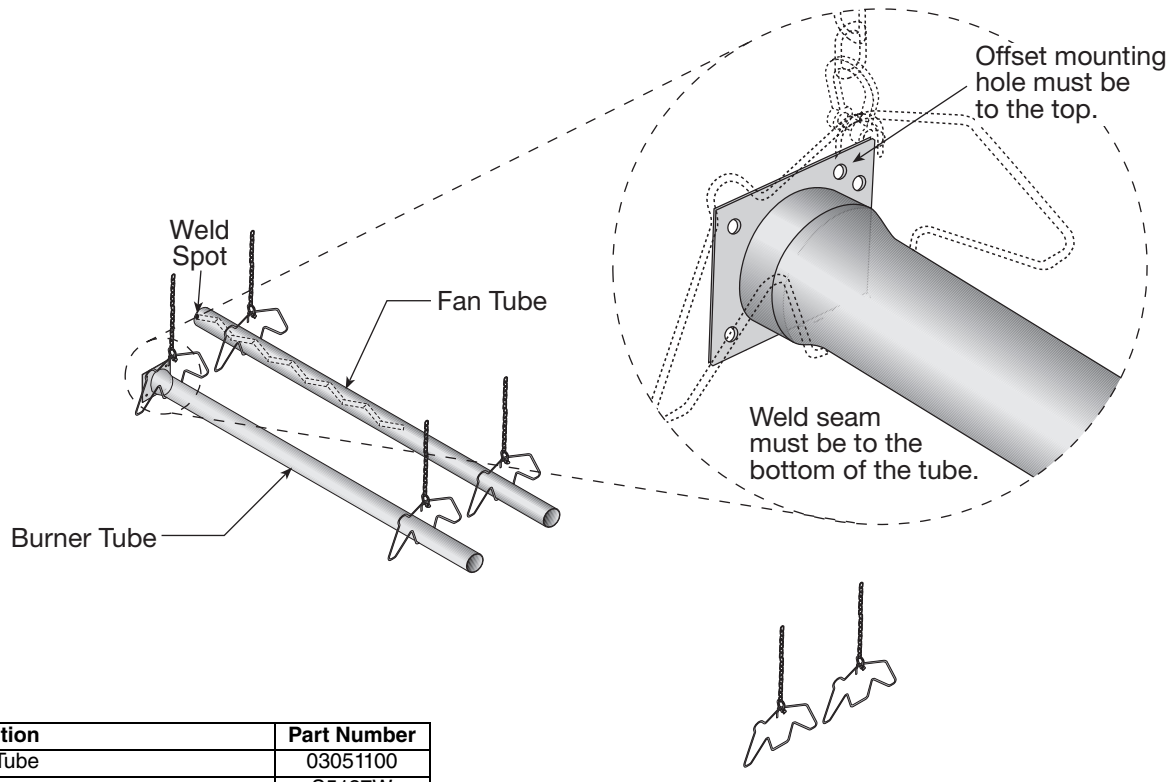
Model	BH15UT	BH20UT	BH25UT/EF	BH30UT/EF	BH35UT/EF	BH40UT/EF	BH45UT/EF	BH50UT/EF
Reflector Overlap (approx.)	1780 mm	250 mm	250 mm	580 mm	580 mm	580 mm	690 mm	690 mm

Step 7.2 U-Tube Hanger Placement


Bow Shackle
Spreader Bar
Threaded Bar
Suspension Chain
Washers
Bolt (Torque: 13.5 Nm 129 in lb)
Tube and Reflector Hanger
Optional Hanging Configuration
NOTE: Spreader bar must be used on single suspension point installations. Do not hang heater from spreader bar.
Bow Shackle
Suspension Chain
Tube and Reflector Hanger
First Tube and Reflector Hanger
2290 mm ± 250 mm
See Assembly Drawing

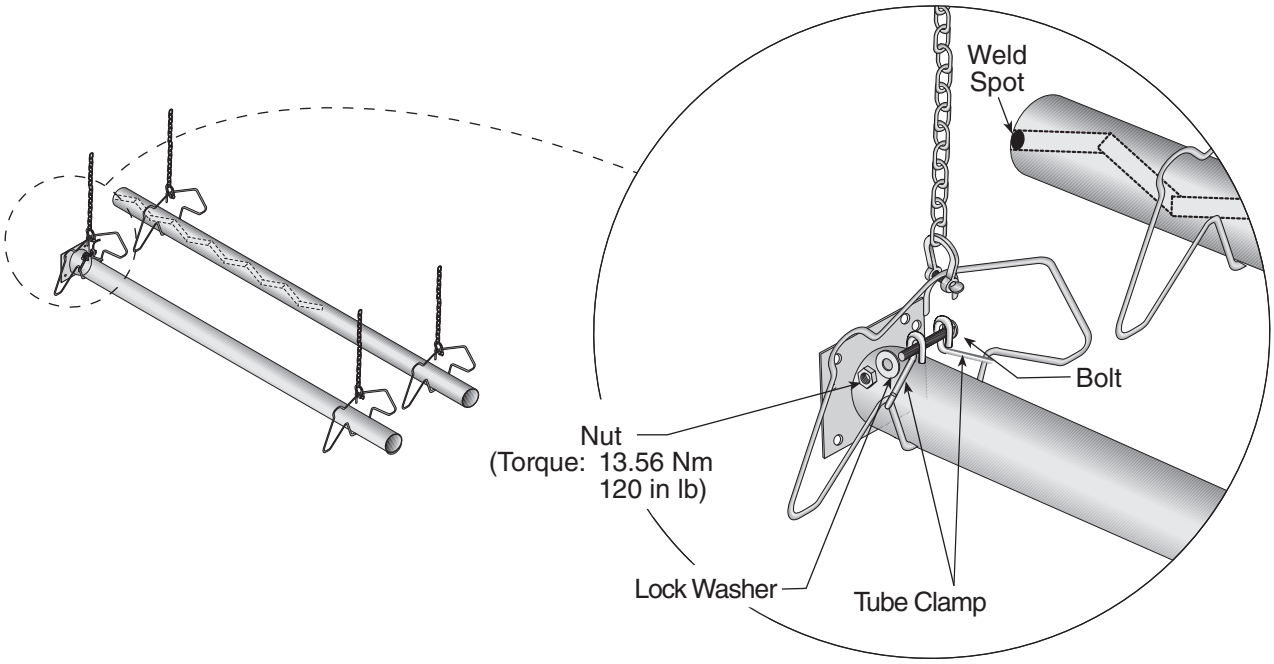
Description	Part Number
Bow Shackle	E0007576
Tube/Reflector Hanger	03090100
Spreader Bar	07260010

Step 7.3 Burner Tube and Fan Tube Installation



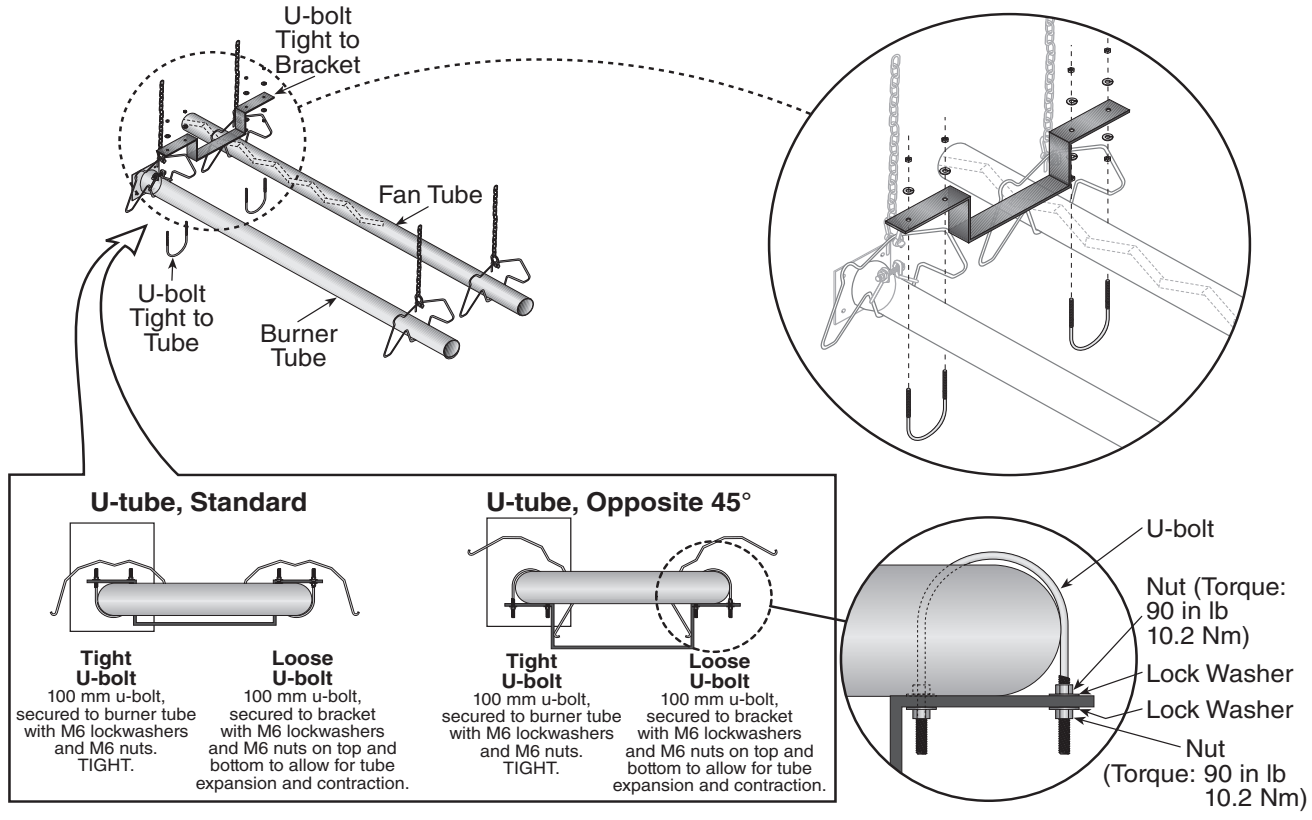
Description	Part Number
Burner Tube	03051100
Fan Tube	S5127W

Step 7.3.1 Tube Clamp Package Installation



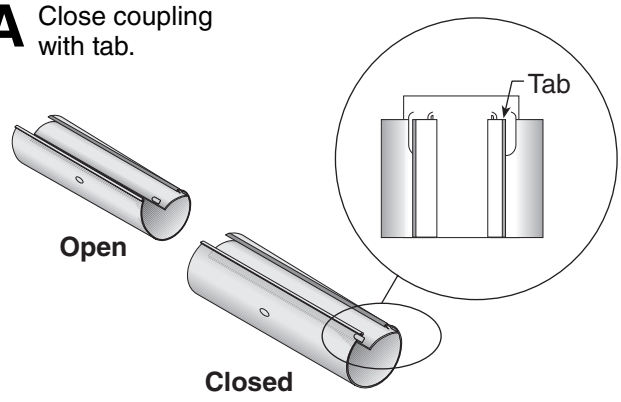
Description	Part Number
Tube Clamp Package	**01318901**
Tube Clamp	01396801
Bolt	97113940
Flat Washer	95211600
Nut	92113900

Step 7.4 U-Tube Support Bracket Assembly Installation

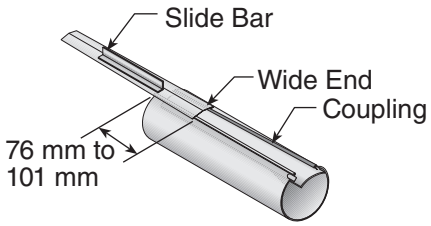


Step 7.5 Coupling and Tube Assembly

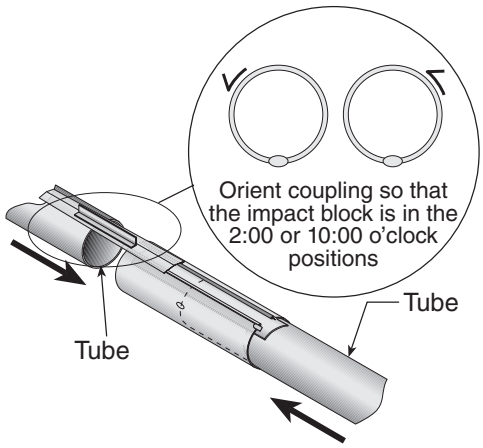
A Close coupling with tab.



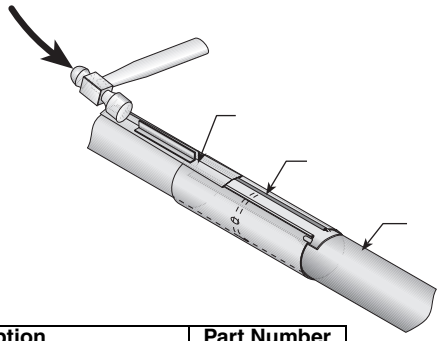
B Start slide bar/coupling lock onto coupling.



C Insert tubes into coupling.



D Tighten coupling to join tubes.

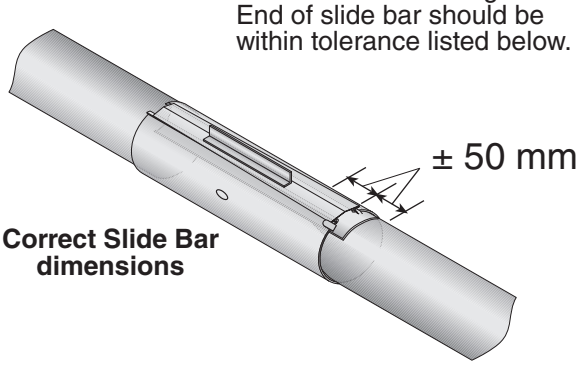


Description	Part Number
Coupling	01329600
Slide Bar/Coupling Lock	01329700
Tube	91409408

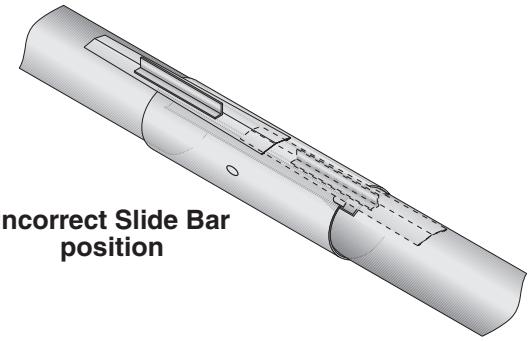
Step 7.5.1 Coupling and Tube Assembly (Continued)

Tighten slide bar as shown below.

Drive slide bar until tight.
End of slide bar should be
within tolerance listed below.



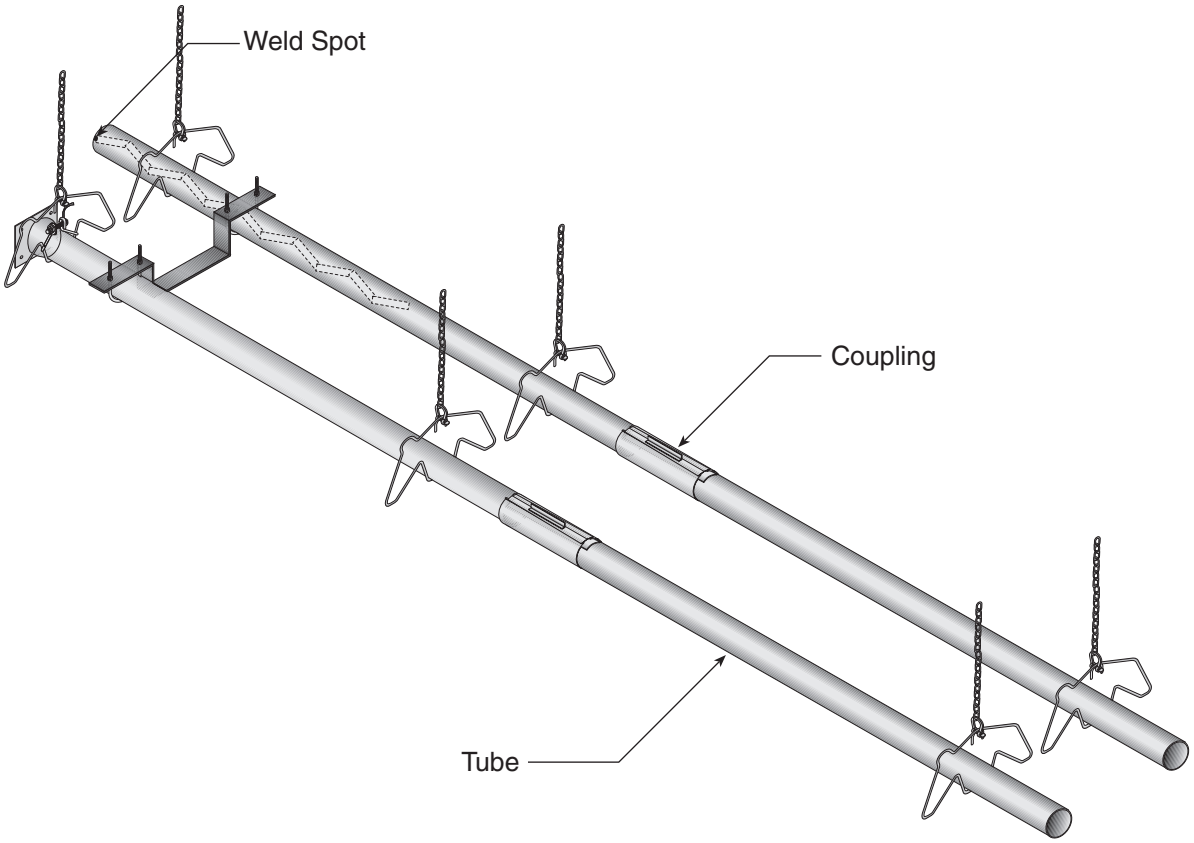
Correct Slide Bar dimensions



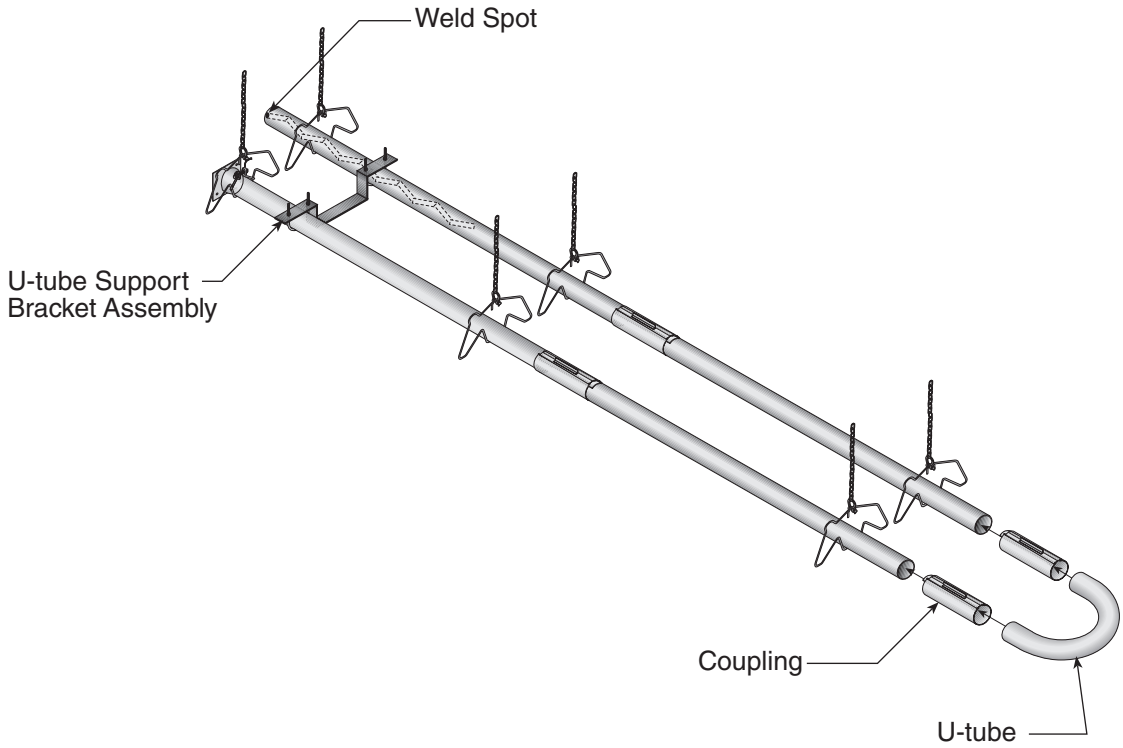
Incorrect Slide Bar position

- **Repeat *Step 7.5* A - D until all tubes are assembled.**

Step 7.6 Tube Installation

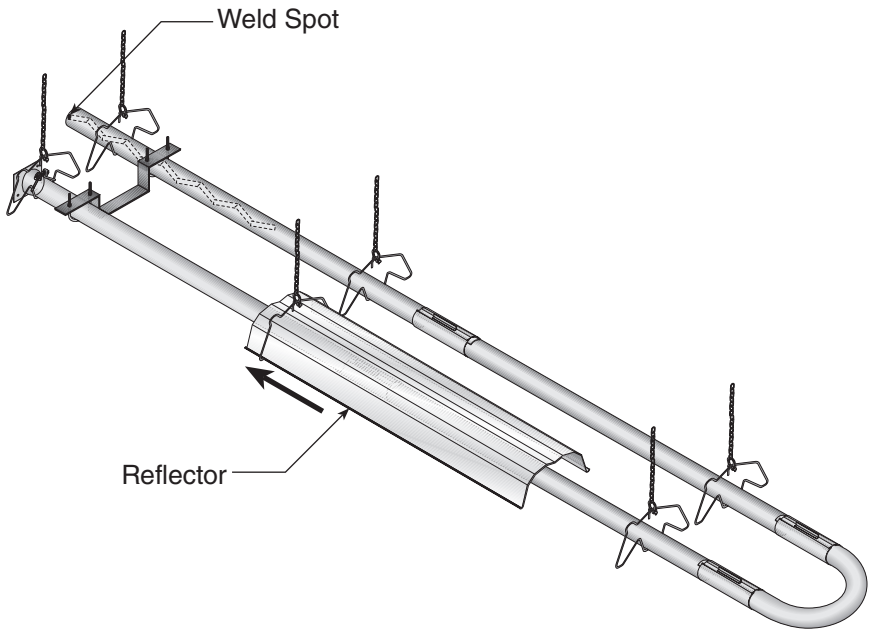


Step 7.7 U-Tube Installation



Description	Part Number
Coupling	01329600
Slide Bar/Coupling Lock	01329700
U-Tube	01335901

Step 7.8 Reflector Installation



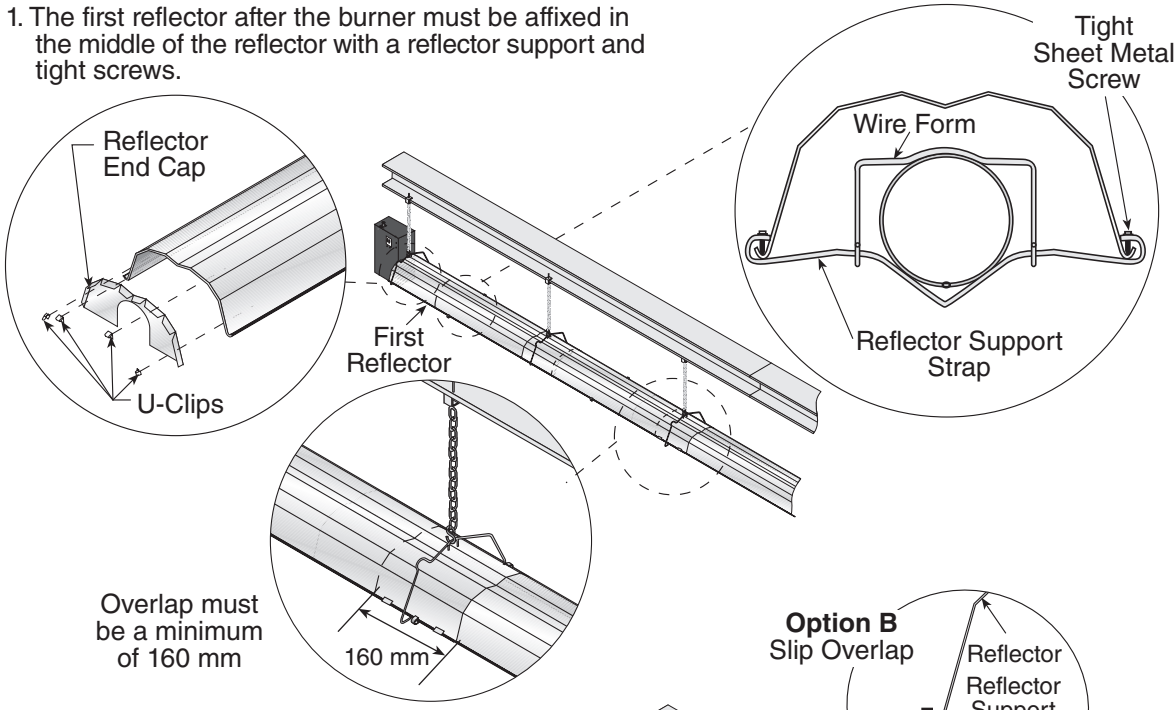
Description	Part Number
Reflector	02750303

Step 7.8.1 Reflector, U-Clip and Reflector Support Installation

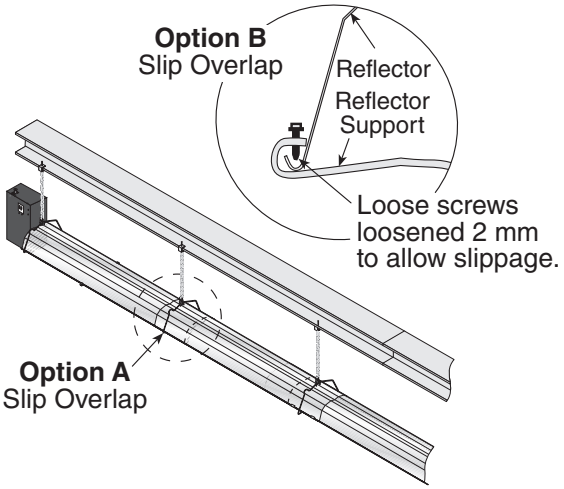
The pictorial drawings of the heater construction in *Section 6* are schematic only and provide a general guideline of where hangers, reflector supports and U-clips are to be installed.

To ensure proper expansion and contraction movement of the reflectors, a combination of U-clips and reflector supports are used. The positioning of reflector supports and U-clips depend on the individual installation. Use either pop rivets or sheet metal screws instead of U-clips when installing end caps and joint pieces in areas where impact and high wind may be a factor. The following rules must be observed:

1. The first reflector after the burner must be affixed in the middle of the reflector with a reflector support and tight screws.

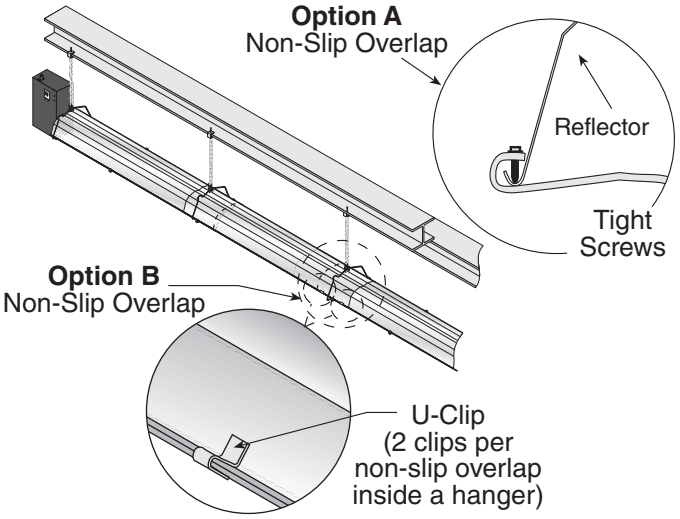


2. The overlap at the first and second reflector is a slip overlap. Thereafter, every third reflector joint is a slip overlap. A slip overlap is achieved by either:
   a.) both reflectors lay inside a hanger. (no reflector support needed).
   b.) using a reflector support with loose screws at the reflector overlap.



3. The remaining reflector overlaps require a non-slip overlap connection. To affix the reflectors together in a non-slip overlap either:
   a.) use reflector support and tight screws.
   b.) if both reflectors lay inside a hanger, u-clips or sheet metal screws may be used.

   This section of three reflectors joined together must be affixed to the tube with at least one reflector support with tight screws.



Description	Part Number
Reflector Support Package	**03050010**
Wire Form	91908004
Reflector Support Strap	03050000
Screw #8 x 3/4 (3.9 x 19mm)	94320812
U-Clip Package	91107720
Reflector End Cap	027508XX

SECTION 8: MULTIBURNER CONFIGURATION & INSTALLATION

8.1 Initial Assembly

See Page 9, Section 6 for linear heater assembly instructions

See Page 20, Section 7 for U-tube heater assembly instructions.

Check layout drawings for location of manifold pipe installation.

Figure 23: Multiburner Damper Flange Installation

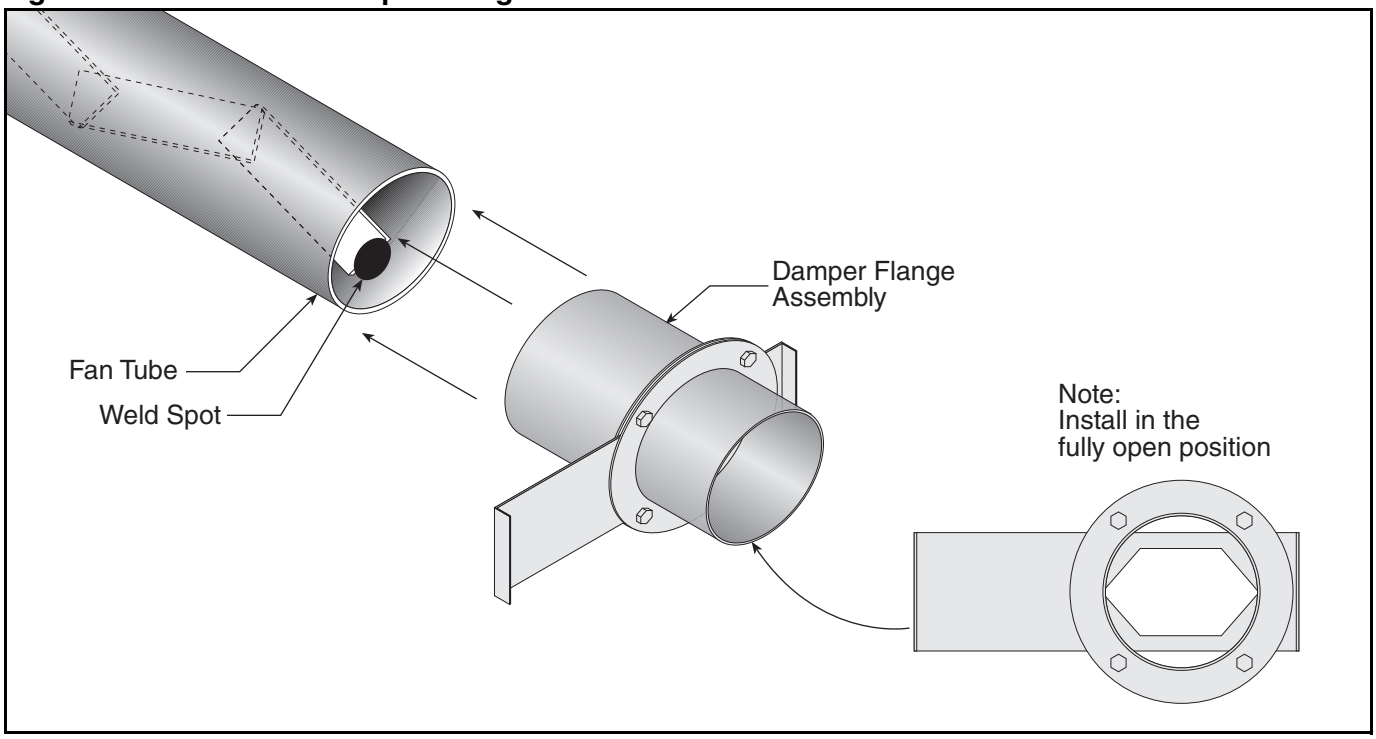
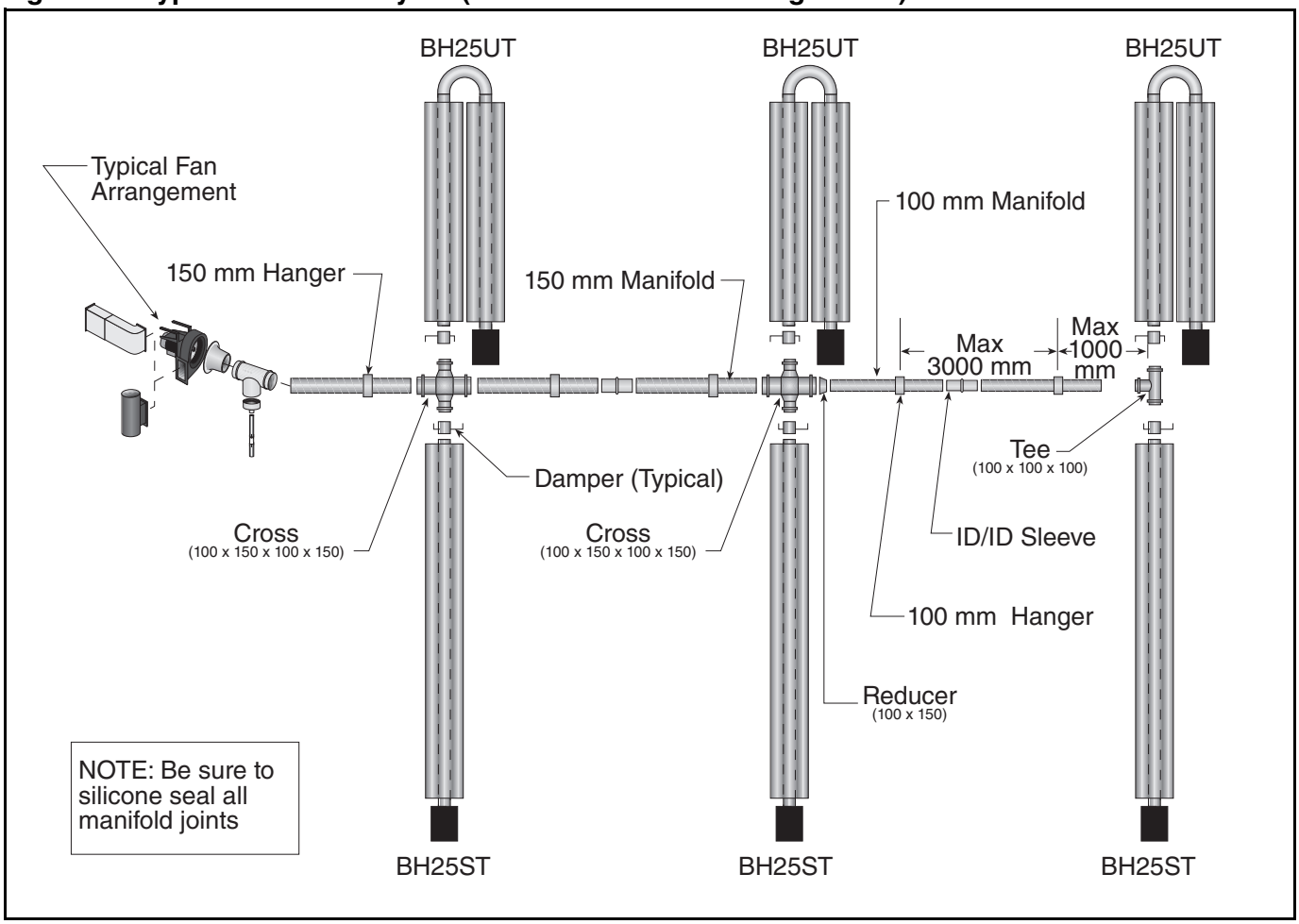


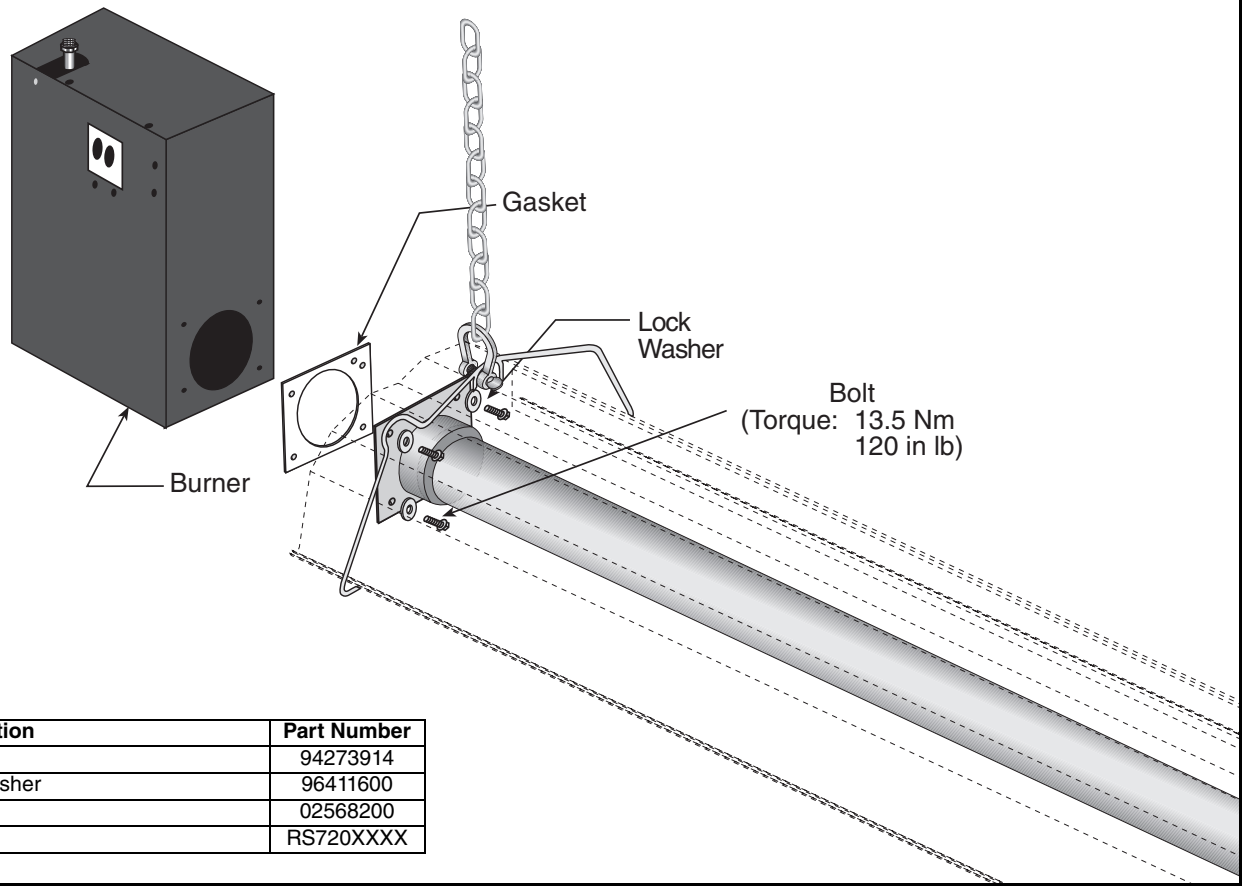
Figure 24: Typical Manifold Layout (Linear and U-Tube Configuration)



SECTION 9: BURNER & FAN INSTALLATION

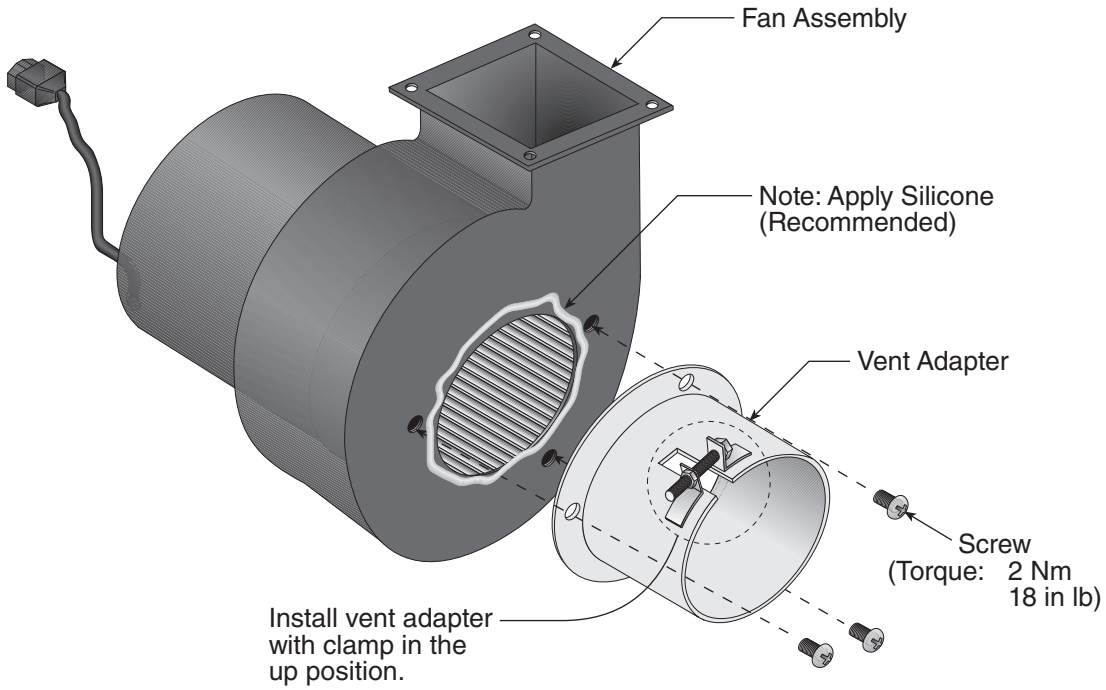
Step 9.1 Burner Installation

NOTE: Tube clamp package not shown for clarity. For details, *see Page 17, Step 6.5*.



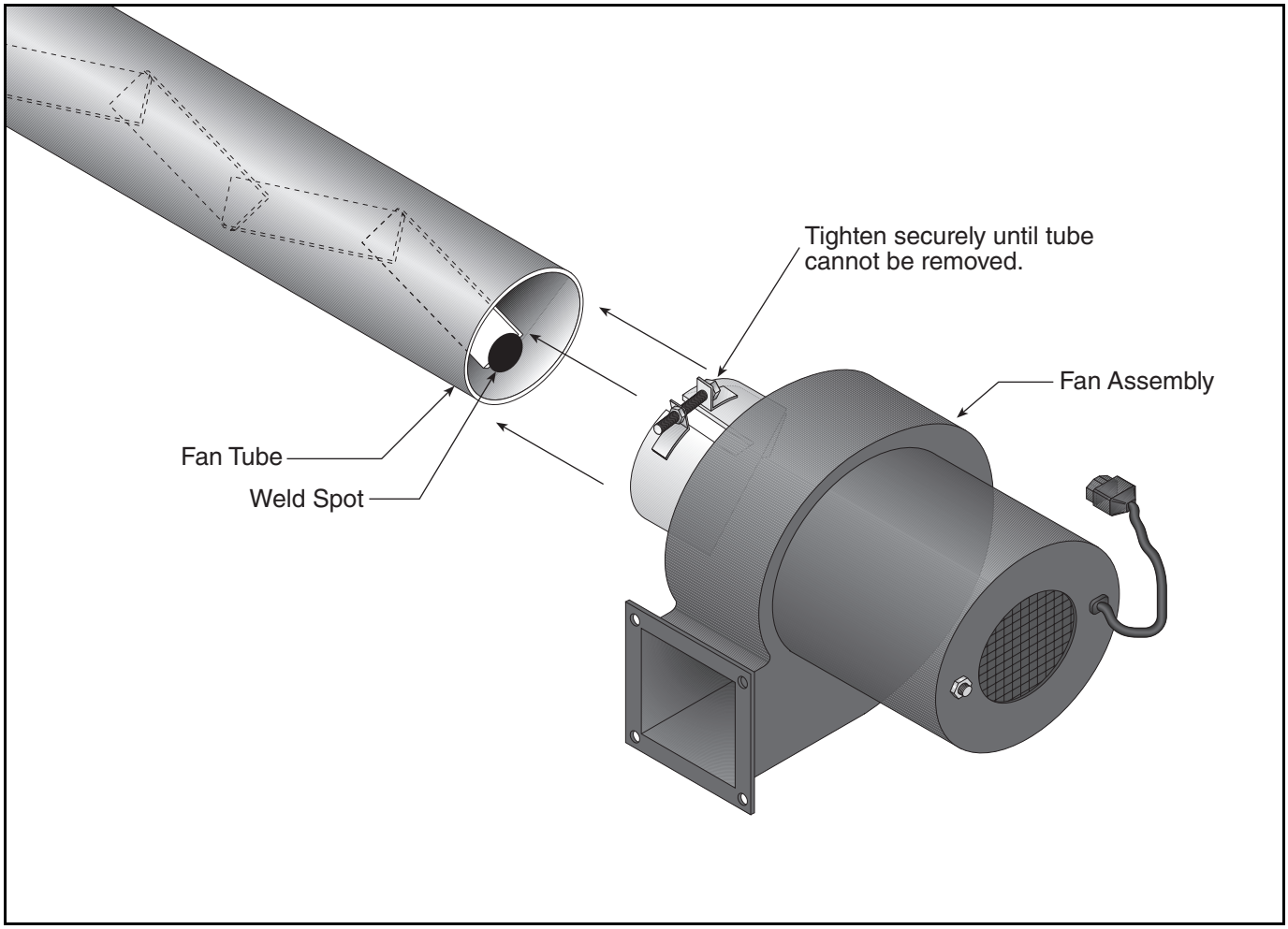
Description	Part Number
Bolt	94273914
Lock Washer	96411600
Gasket	02568200
Burner	RS720XXXX

Step 9.2 Fan Assembly

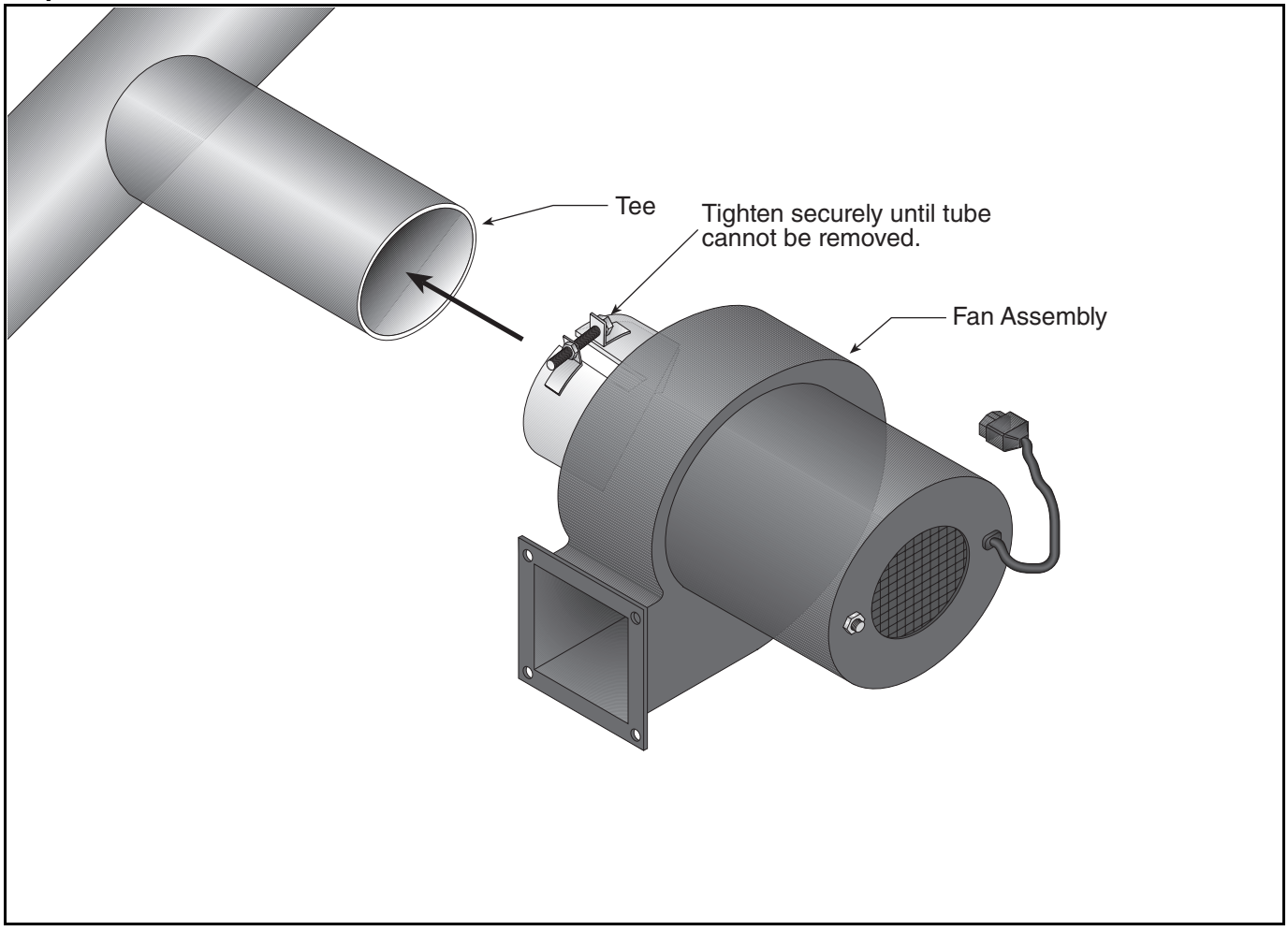


Description	Part Number
Fan Assembly	See Parts List
Vent Adapter	9071060X
Screw	C0061B

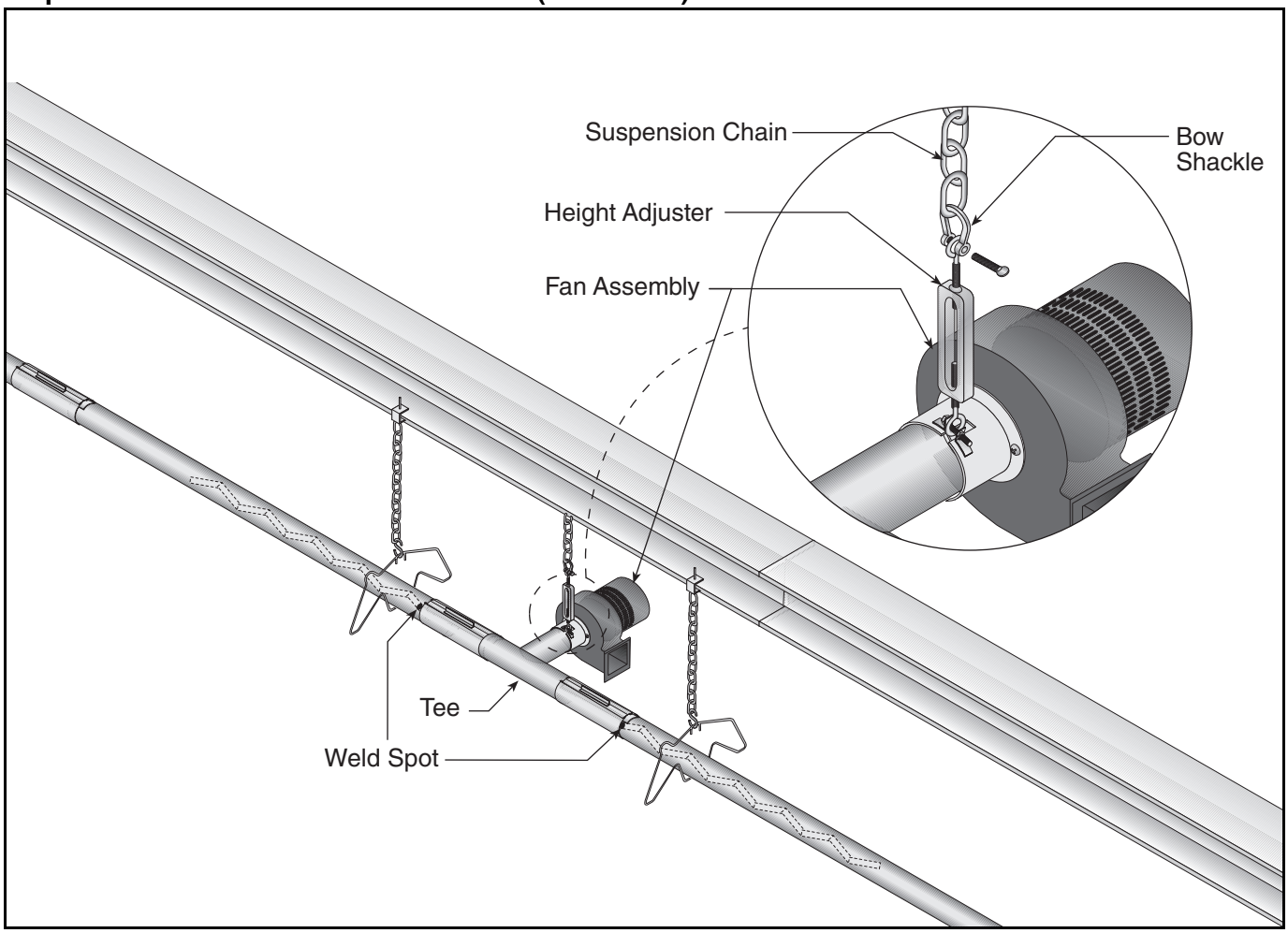
9.3 Linear & U-Tube Fan Installation



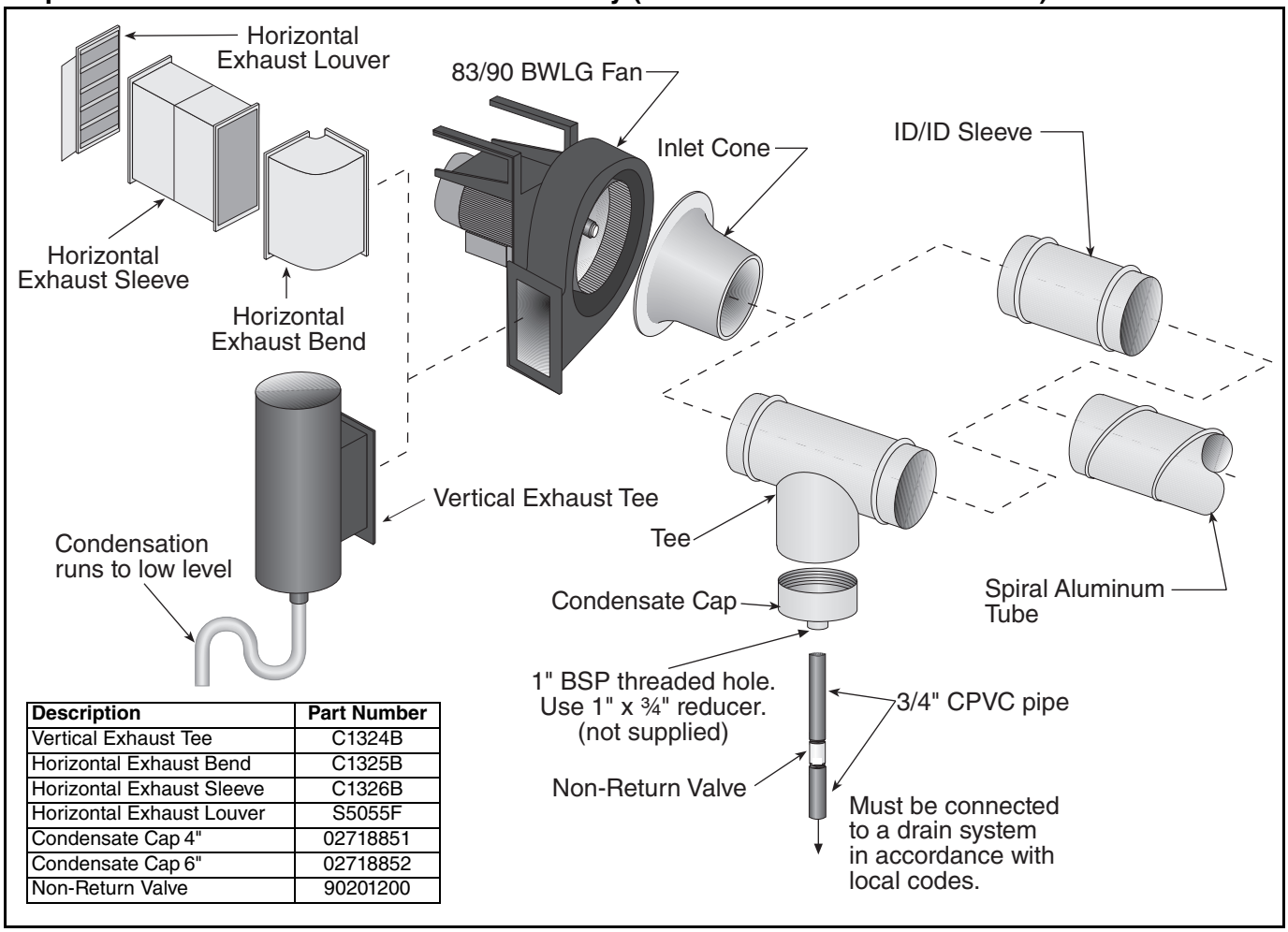
Step 9.4 Double Linear Fan Installation



Step 9.4.1 Double Linear Fan Installation (Continued)

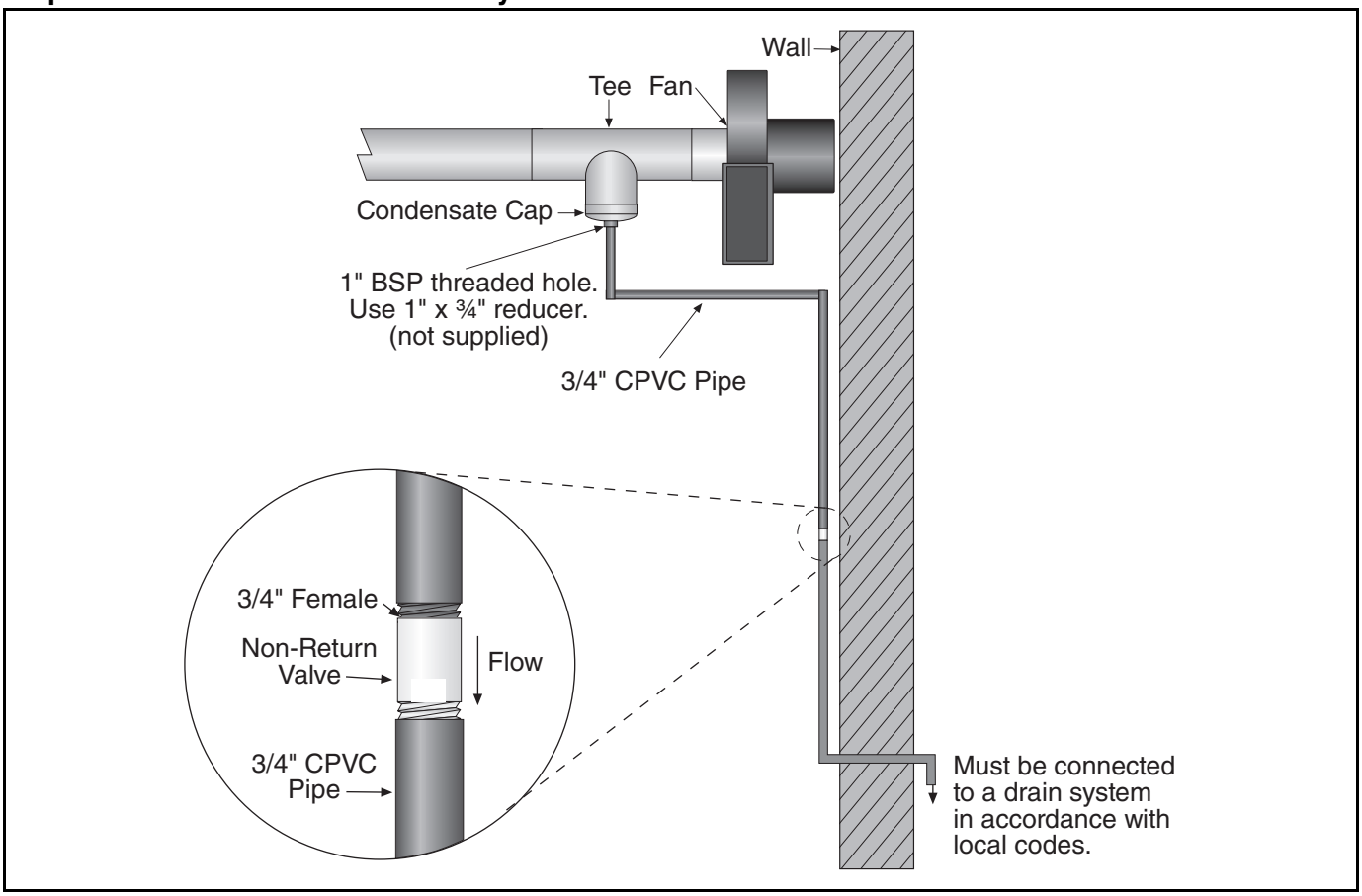


Step 9.5 Multiburner 83/90 BWLG Fan Assembly (Horizontal and Vertical Outlets)



Description	Part Number
Vertical Exhaust Tee	C1324B
Horizontal Exhaust Bend	C1325B
Horizontal Exhaust Sleeve	C1326B
Horizontal Exhaust Louver	S5055F
Condensate Cap 4"	02718851
Condensate Cap 6"	02718852
Non-Return Valve	90201200

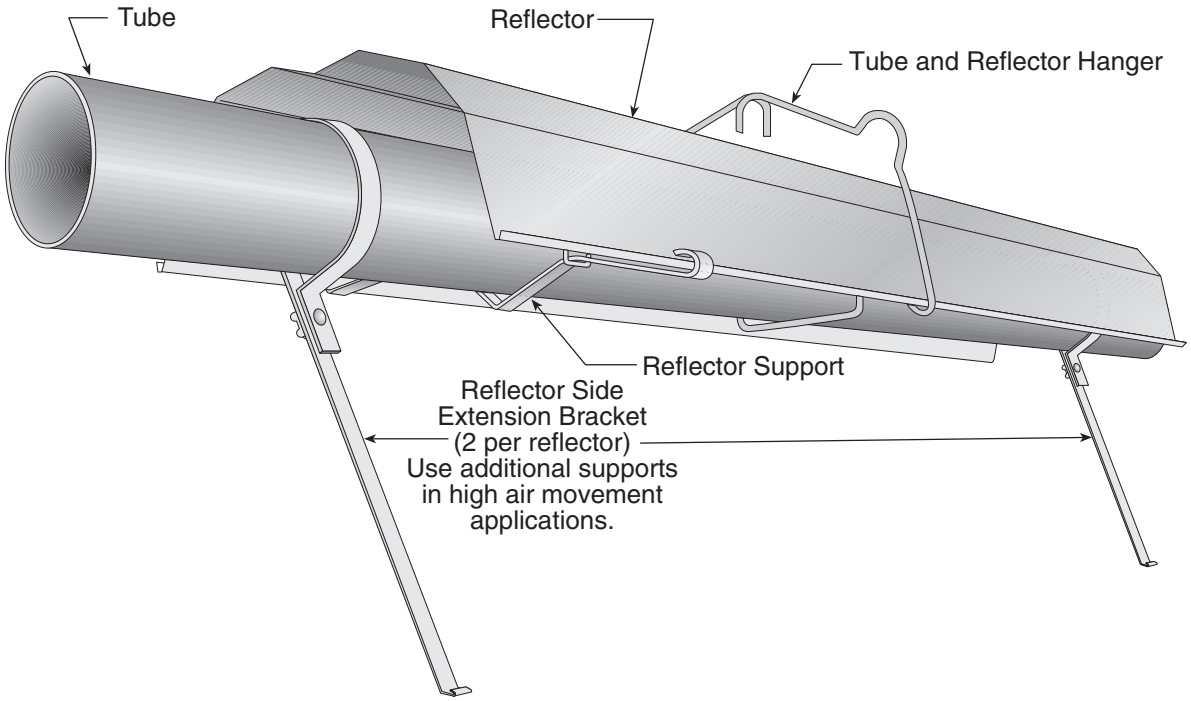
Step 9.6 Condensate Drain Assembly



SECTION 10: OPTIONAL HEATER ACCESSORIES

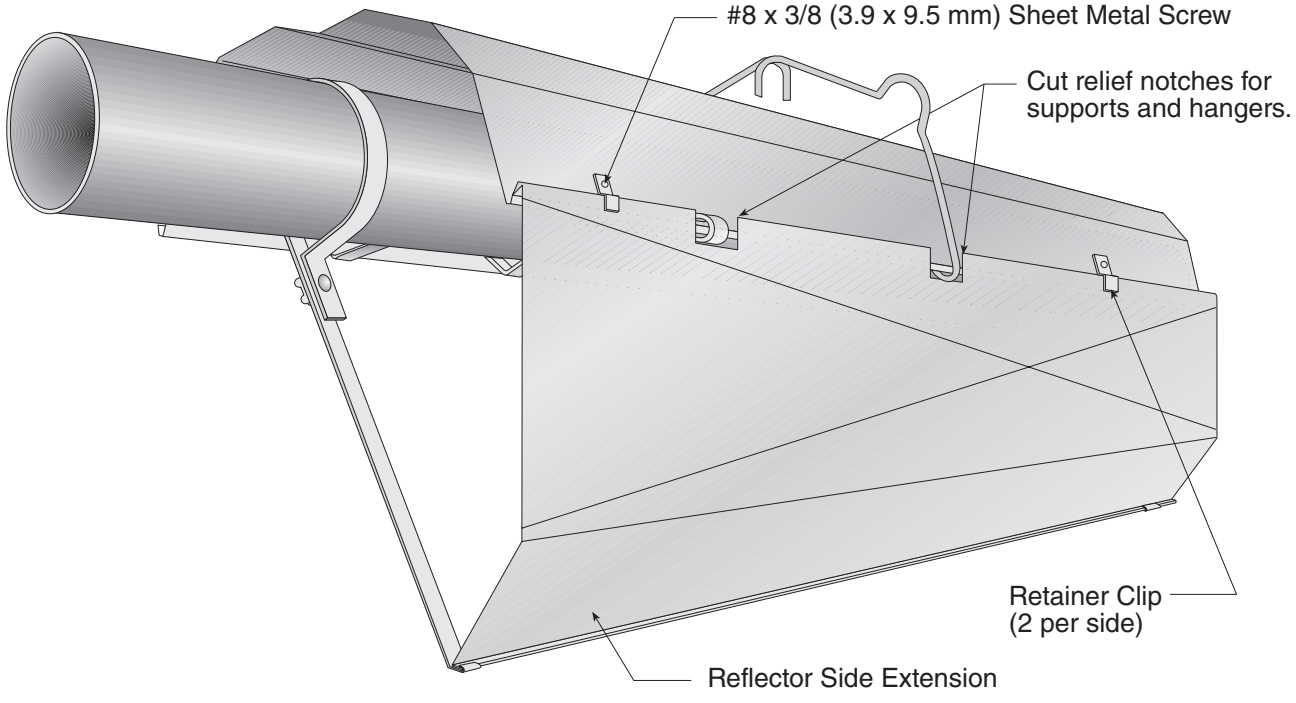
10.1 Reflector Side Extension Installation

Step 10.1.1 Bracket Installation



Description	Part Number
Reflector Side Extension Package	**S7377K**
Reflector Side Extension	01368000
Retainer Clips	02751200
Reflector Side Extension	01329910

Step 10.1.2 Side Reflector Installation


#8 x 3/8 (3.9 x 9.5 mm) Sheet Metal Screw
Cut relief notches for
supports and hangers.
Retainer Clip
(2 per side)
Reflector Side Extension

10.2 U-Tube Cover Installation

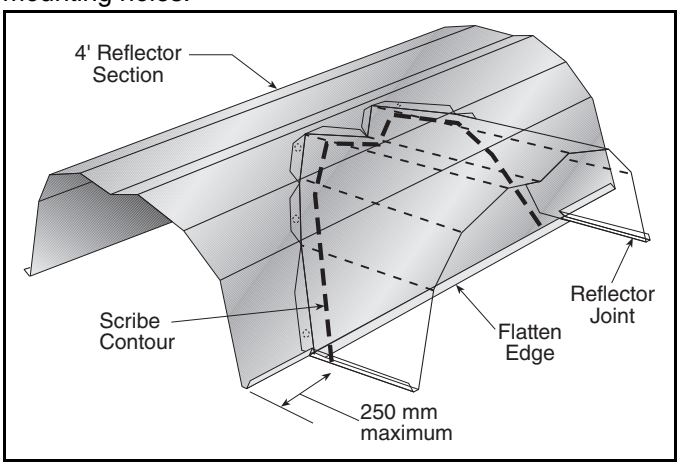
The package contains two reflector joint pieces (P/N 02750901), one 8’ reflector and 18 x #8 sheet metal screws. Install the U-tube cover using the following procedure.

Step 10.2.1

Cut the 8’ reflector in half to be used on both sides to cover the U-tube.

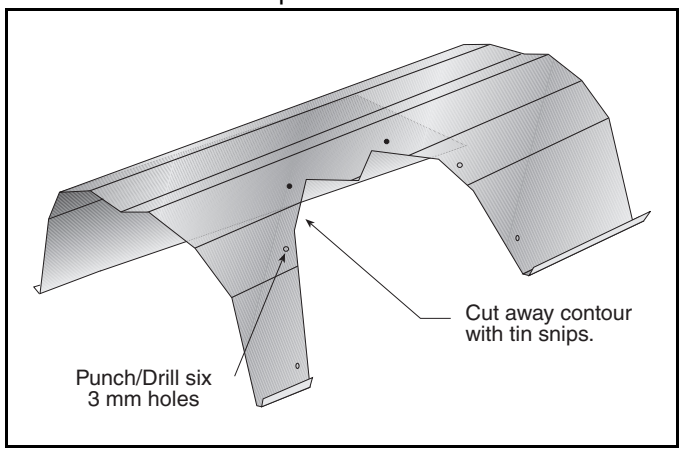
Step 10.2.2

Flatten 4’ reflector edge where joint piece matches. Put a mark on the 4’ reflector, directly over the tube center. Center the accessory joint piece on the mark and scribe its contour on the reflector. Scribe the location of the mounting holes.



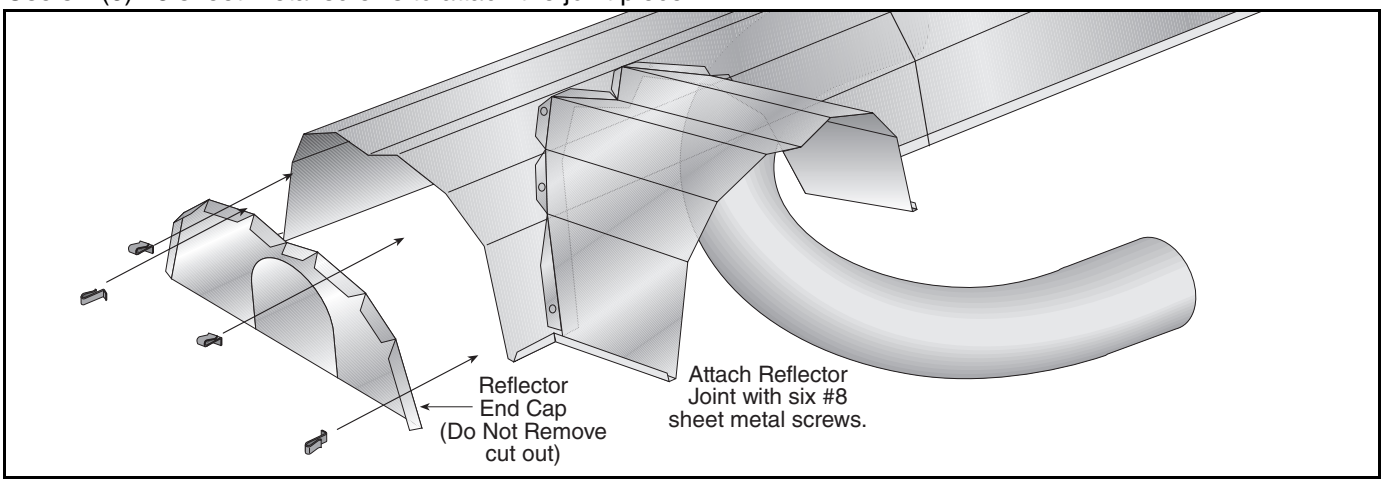
Step 10.2.3

Cut away the reflector to clear the tube, leaving about 1” of material inside the scribed contour to attach the accessory joint. Drill or punch six (6) 3 mm diameter holes in reflector in the positions shown below.



Step 10.2.4

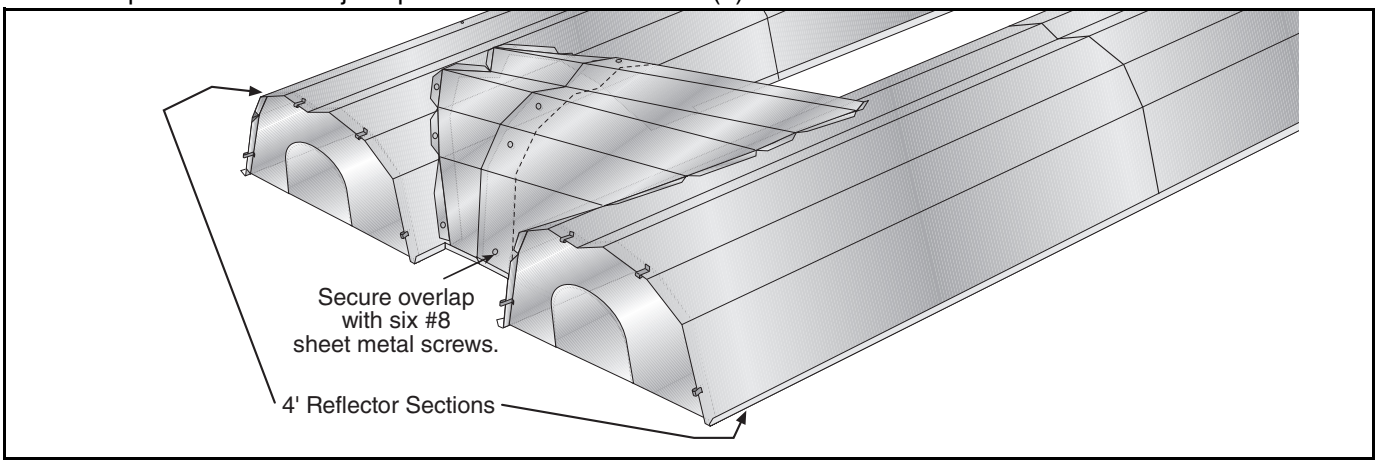
Use six (6) #8 sheet metal screws to attach the joint piece.



Repeat *Step 10.2.1 through Step 10.2.4* to attach the reflector joint piece on the other reflector.

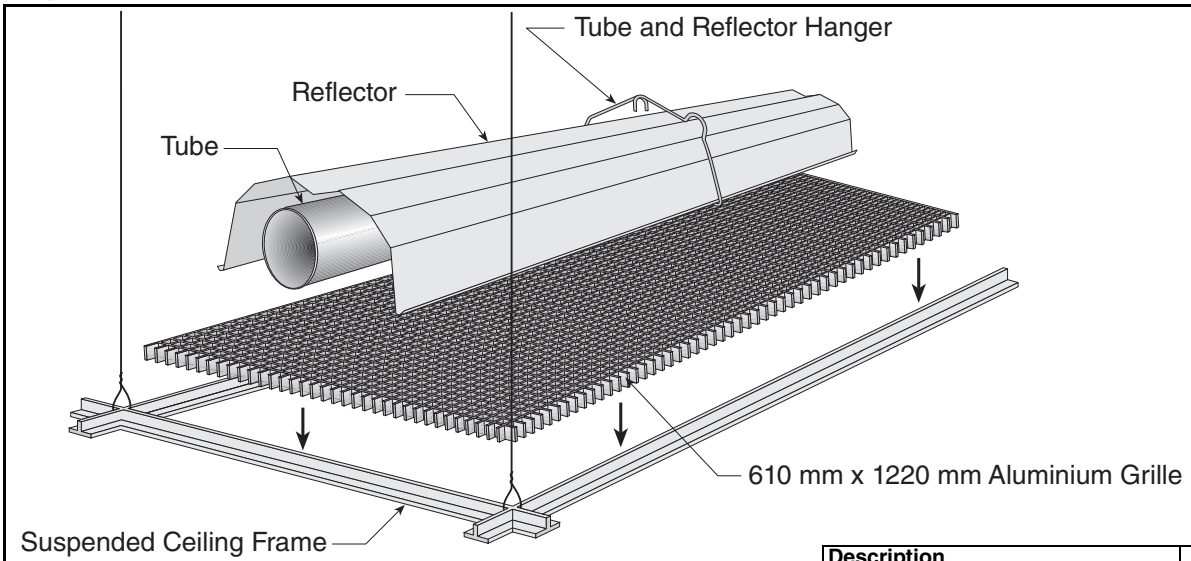
Step 10.2.5

The overlap of both reflector joint pieces is attached with six (6) #8 sheet metal screws.



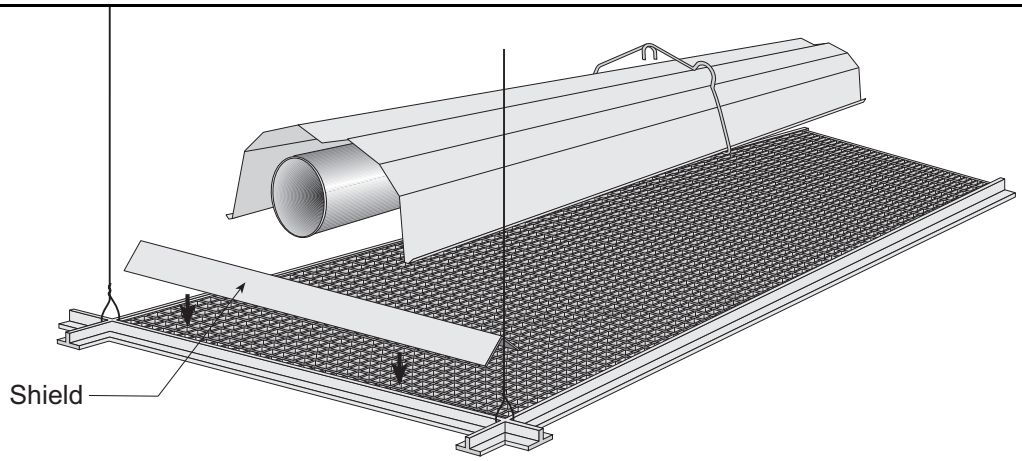
10.3 Decorative Grille Installation

Step 10.3.1 Grille Installation



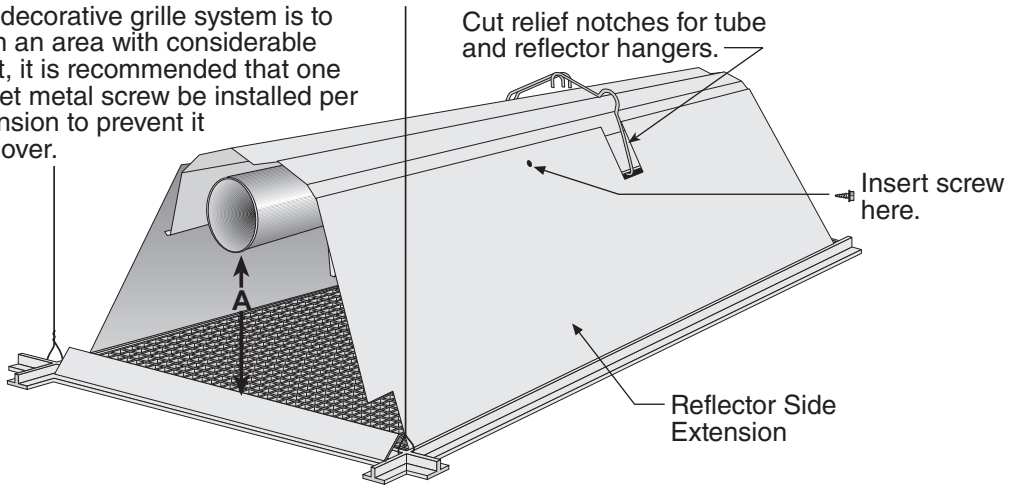
Description	Part Number
Decorative Grille Package 2' x 4'	**S7331K**
Aluminium Grille 2' x 4'	91407000
Shield Deco Grille	01365900
Reflector Side Extension	01370412

Step 10.3.2 Frame Shield Installation



Step 10.3.3 Reflector Side Extension Installation for Decorative Grilles

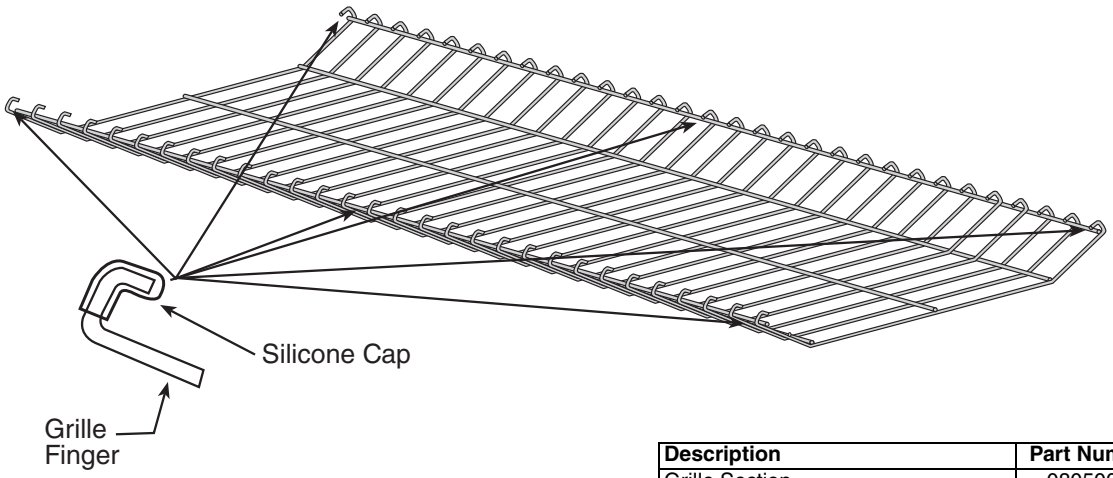
NOTE: If the decorative grille system is to be installed in an area with considerable air movement, it is recommended that one #8 x 3/8" sheet metal screw be installed per reflector extension to prevent it from blowing over.



Distance "A"		Extension	
Minimum	Maximum	Part No.	Width
4 cm	15 cm	01370408	20 cm
15 cm	26 cm	01370412	30 cm
26 cm	37 cm	01370416	40 cm

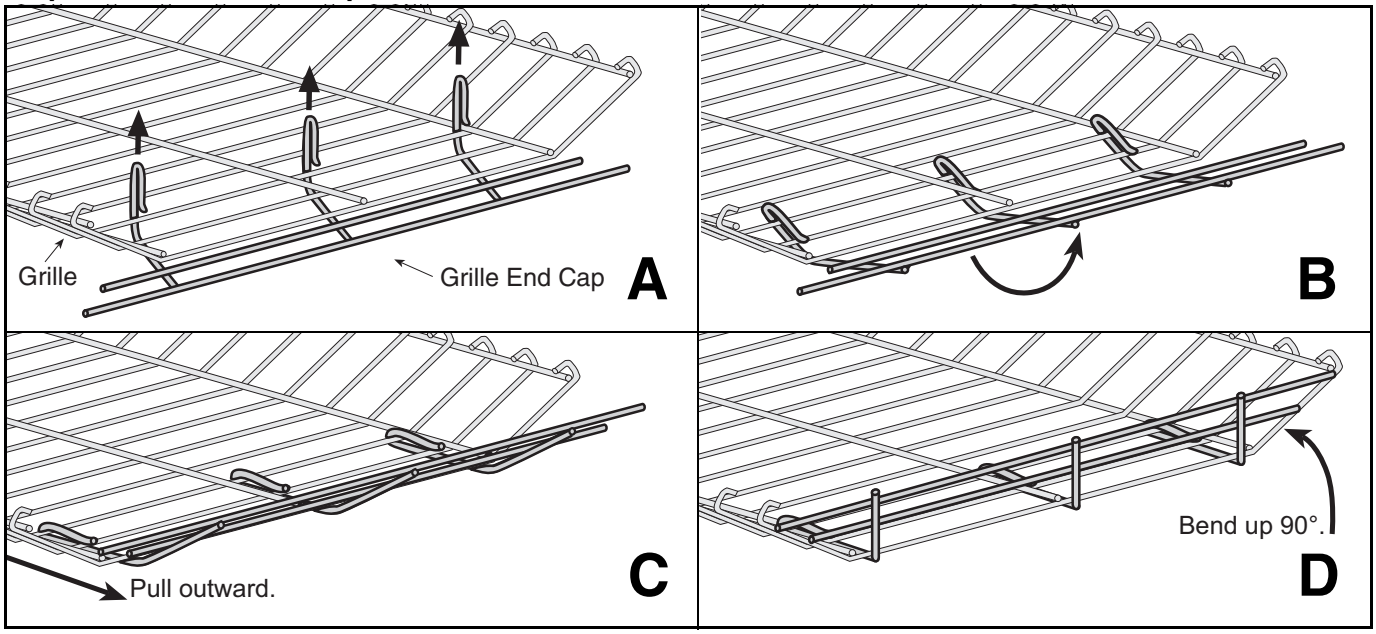
10.4 Protective Grille Installation

Step 10.4.1 Silicone Cap Installation

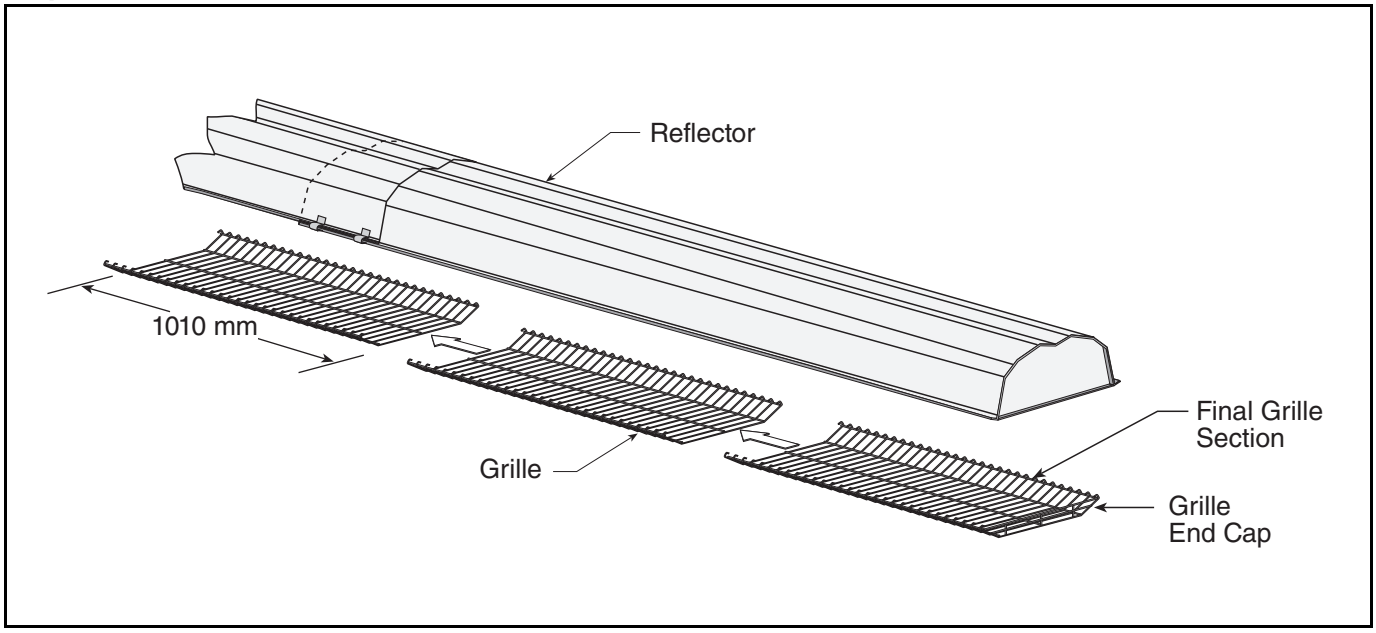


Description	Part Number
Grille Section	08050001
Grille End Cap	08050002
Silicone Cap	91915951-6P

Step 10.4.2 Grille End Cap Installation

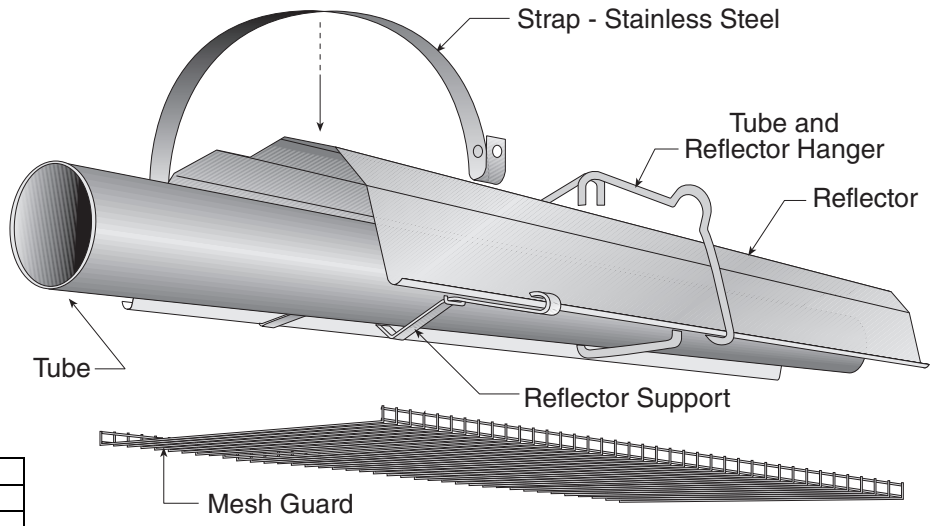


Step 10.4.3 Grille Installation



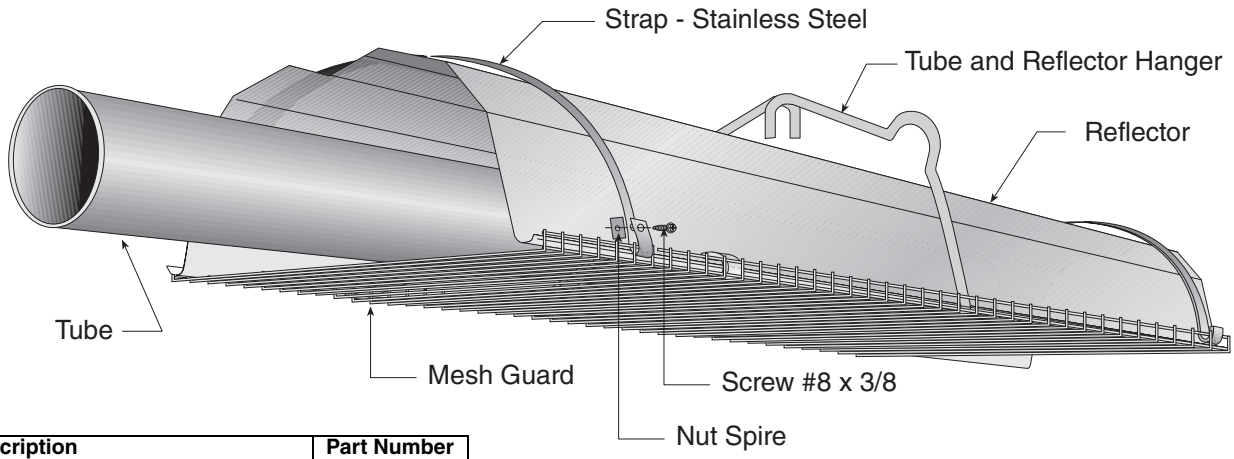
10.5 Sports Hall Guard Installation

Step 10.5.1 Grille Installation



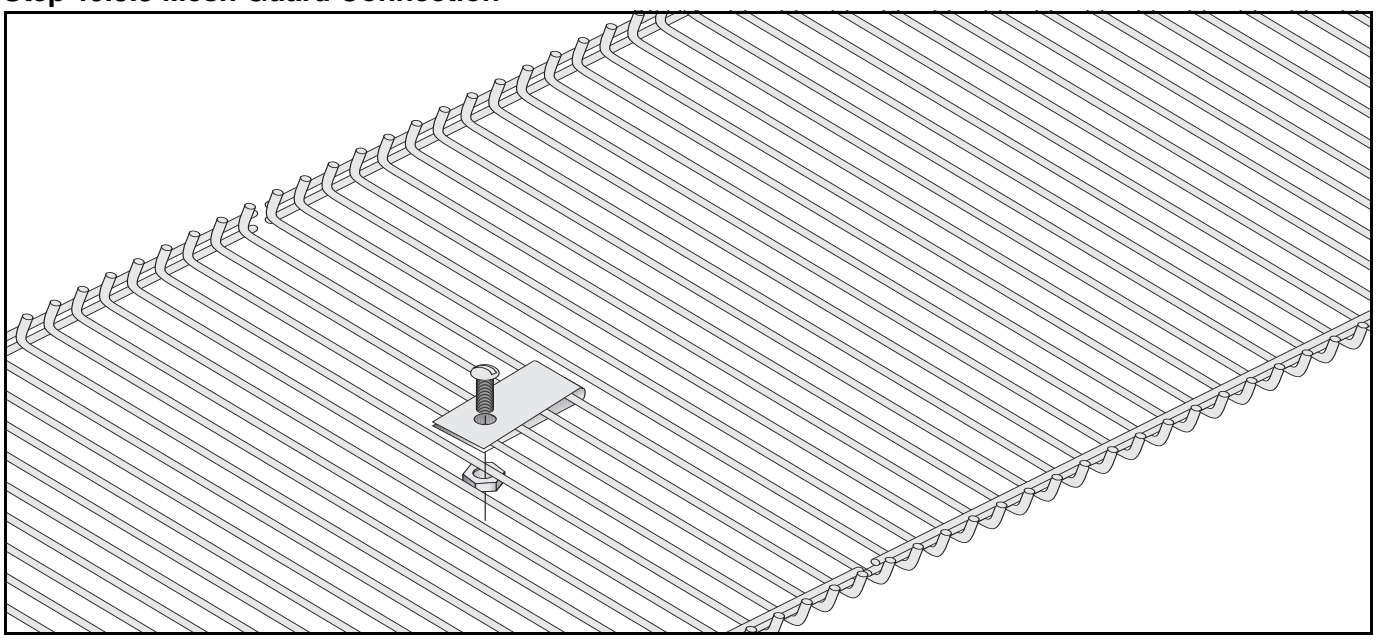
Description	Part Number
Mesh Guard 2438 mm	E0009855
Mesh Guard 1524 mm	C2329B
Strap Stainless Steel	S5218W

Step 10.5.2 Fastener Installation



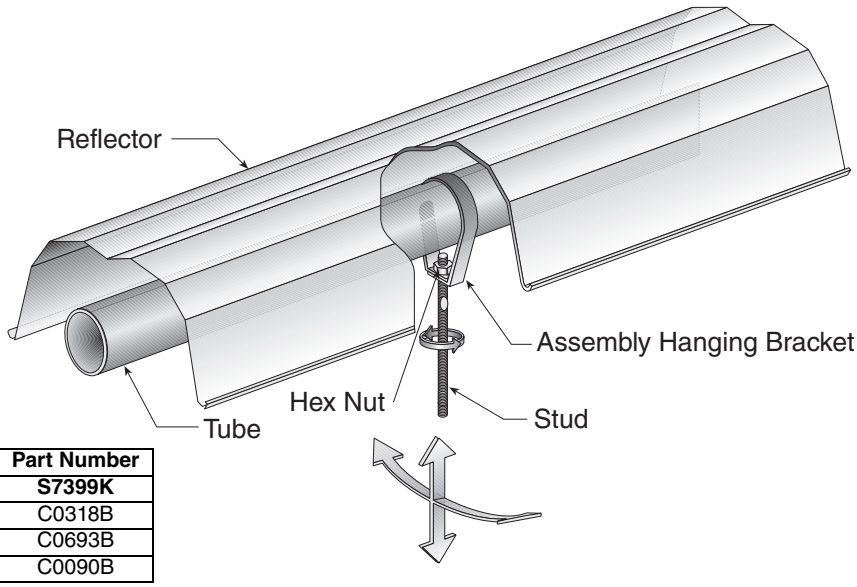
Description	Part Number
Nut Spire	C1088B
Screw #8 x 3/8 (3.9 x 9.5mm)	C1089B

Step 10.5.3 Mesh Guard Connection



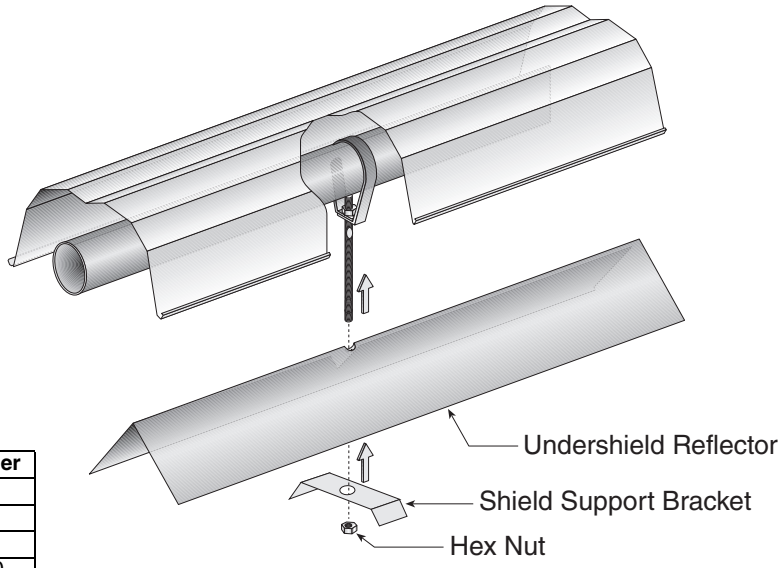
10.6 Undershield Installation

10.6.1 Hanger Installation



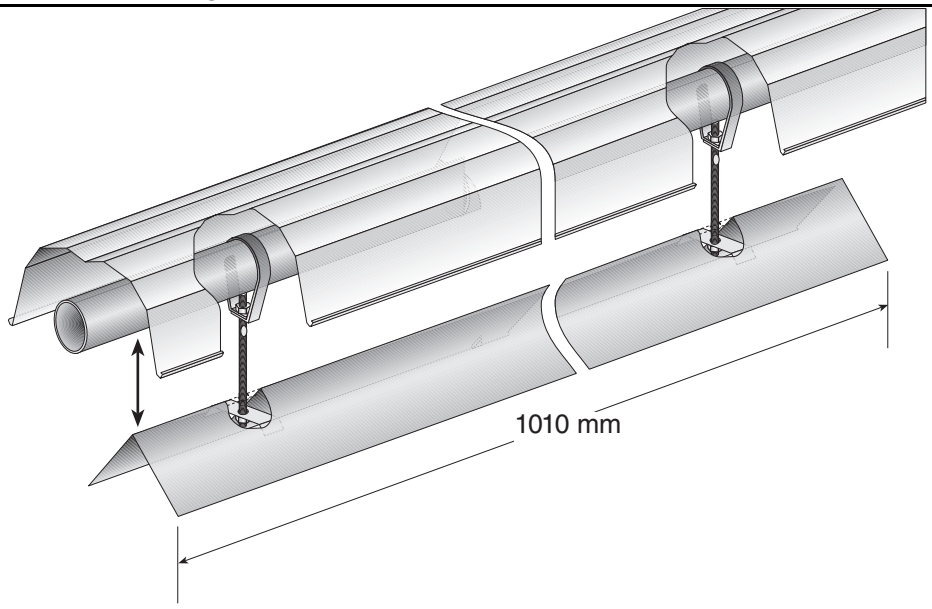
Description	Part Number
Undershield Reflector Package 101 cm	**S7399K**
Assembly Hanging Bracket	C0318B
Stud M6 x 90	C0693B
Nut M6	C0090B

10.6.2 Undershield Installation



Description	Part Number
Undershield Reflector Package 101 cm	**S7399K**
Undershield Reflector 101 cm	C0521B
Nut M6	C0090B
Shield Support Bracket	02751700

10.6.3 Adjust Undershield Height



10.7 Wall Mounting

Install wall mounting brackets at the height shown in the layout drawing provided by the estimator. Space wall mounting brackets and hangers as indicated by dimensions d, e and f (u-tube) in the relevant layout overview drawing for your heater. For linear heaters *see Page 11, Figure 18*, for double linear heaters *see Page 14, Figure 20* and for U-tube heaters *see Page 22, Figure 22*.

10.7.1 Hardware Installation

The wall mounting brackets must be attached to a suitable wall through all mounting holes. Screw sizes less than M8 (5/16") may not be used. In order for the wall mounting brackets to adequately carry the weight of the heater, it must be installed with best building practice.

Model	Quantity of Wall Mounting Brackets	Model	Quantity of Wall Mounting Brackets
BH15UT	2	BH15ST	3
BH20UT	3	BH20ST	4
BH25UT/EF	3	BH25ST/EF	4
BH30UT/EF	3	BH30ST/EF	5
BH35UT/EF	3	BH35ST/EF	5
BH40UT/EF	3	BH40ST/EF	5
BH45UT/EF	4	BH45ST/EF	6
BH50UT/EF	4	BH50ST/EF	6

Figure 25: U-Tube (Horizontal)

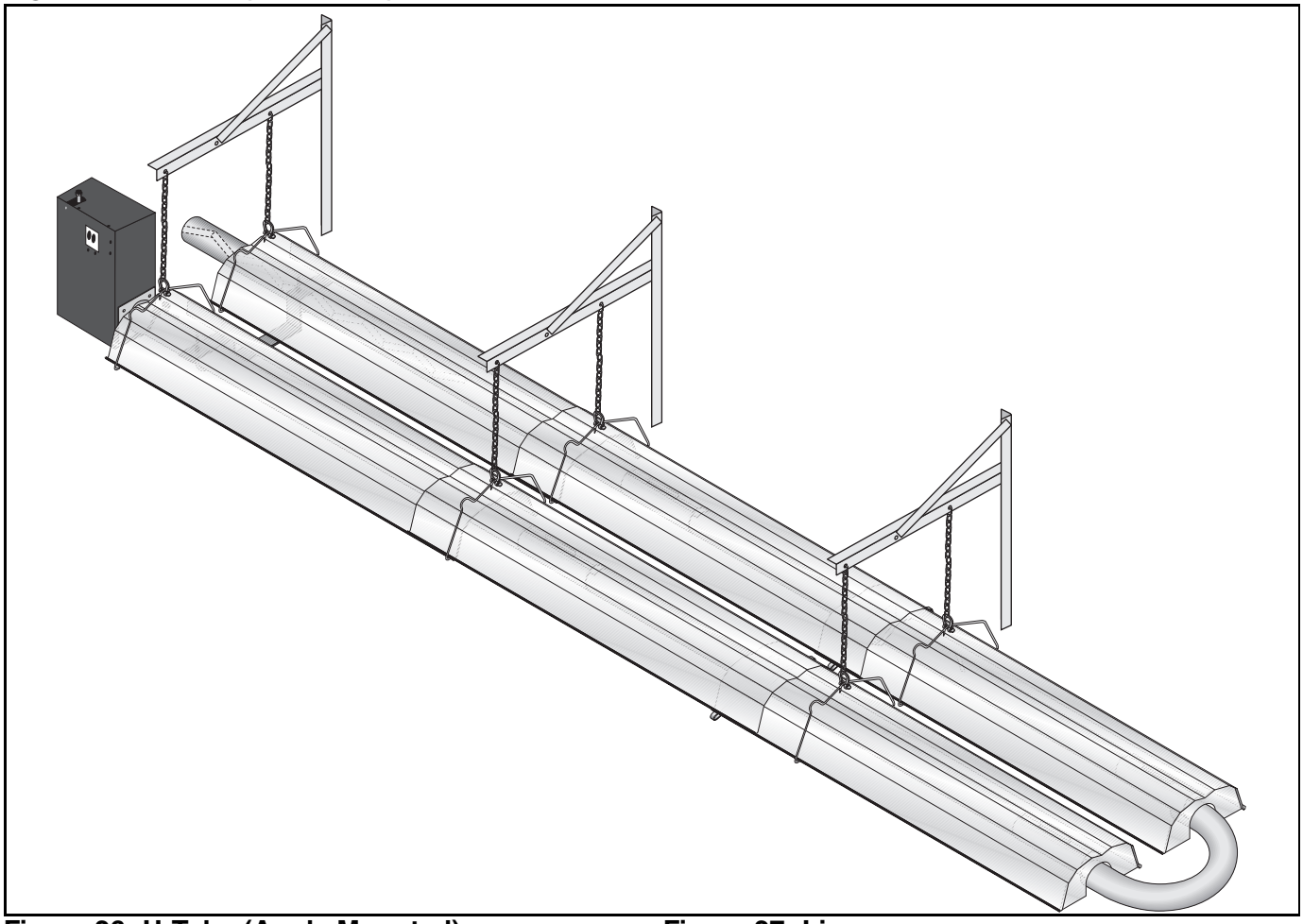


Figure 26: U-Tube (Angle Mounted)

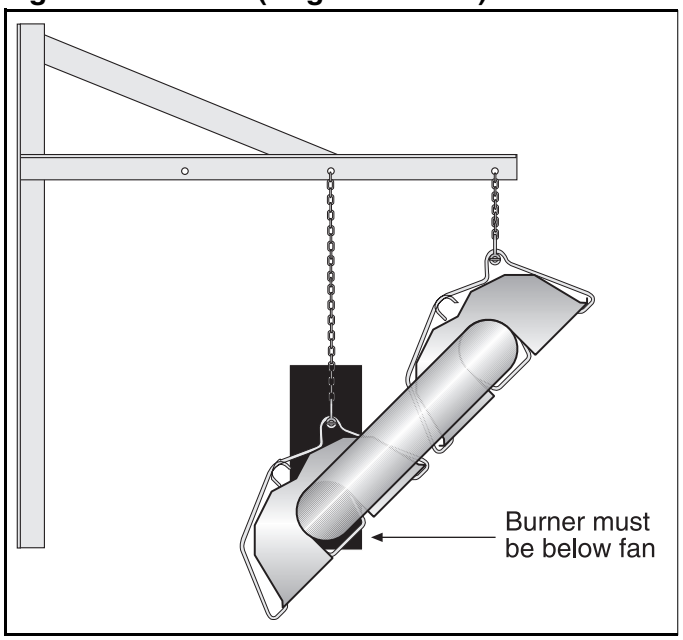
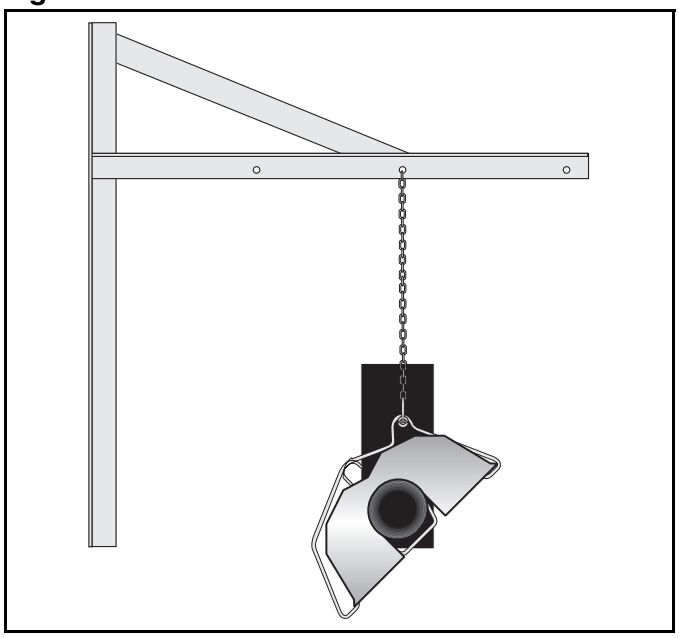


Figure 27: Linear



SECTION 11: VENTING

⚠ WARNING

Carbon Monoxide Hazard

Heaters installed unvented must be interlocked with sufficient building exhaust.

Heaters must be installed according to the installation manual.

Failure to follow these instructions can result in death or injury.

11.1 Flue Installation

The fan outlet may discharge vertically or horizontally. Connection should be made using 100 mm minimum diameter aluminium or stainless steel flue material to National Standard and must be adapted to insert into the 100 mm flue adapter. Both fresh air supply and flue duct shall not exceed 10 m. BH15 and BH20 flue must be insulated if longer than 5 m. BH25 flue must be insulated if longer than 8 m. Contact the manufacturer if more than 2 x 45° offset bends are necessary. The flue must be self supporting.

Fans	Horizontal	Vertical
83 BWLG	190 x 75 (hole)	150 mm dia.
90 BWLG	190 x 75 (hole)	150 mm dia.

11.2 Flueless Installation

If the heater is being installed in an area where combustion products can be dissipated within the building, ensure that the fan outlet is horizontal and away from the burner. Where installation is close to a wall (perimeter system) or other obstruction close to the fan outlet or wall angle mounted, install the heater so that the fan tube is the furthest away from the wall or obstruction, i.e. the fan will always blow into the building or away from the obstruction.

11.3 Ventilation Requirements

Detailed recommendations for air supply are given in the relevant National Standards. There must be an adequate supply of air for both combustion and general ventilation. Air vents should have negligible resistance. Do not locate air vents where they can be easily blocked or flooded, or adjacent to any flues or extraction systems carrying flammable vapour.

11.3.1 Flue Installation

Where the heater(s) is flued, the space containing it must have a permanent outside air vent with a minimum effective area of 4.5 cm^2 per kW of heat input. If mechanical ventilation is employed, the minimum proven airflow rate shall be 2.35 m^3/h per kW of heat input.
If the flue is to be horizontally vented through a wall, a wind-proof terminal must be fitted to outdoor vent pipe to prevent a back draught.

11.3.2 Flueless Installation (EN 13410)

The installation room must have a volume of at least $10m^3/kW$ of installed nominal heat input. A minimum of $10m^3/h$ of exhaust air per kW of operating heat input must be ventilated out of the installation room by either thermal or mechanical evacuation. Appropriate exhaust and fresh air openings must be provided and exhaust fans interlocked with the operation of the heating equipment. Further no exhaust system is necessary if the building air change rate is greater than 1.5 per hour or the density of operating heat input is not greater than 5 W/m^3.

Figure 28: Individual Flue Connection Detail

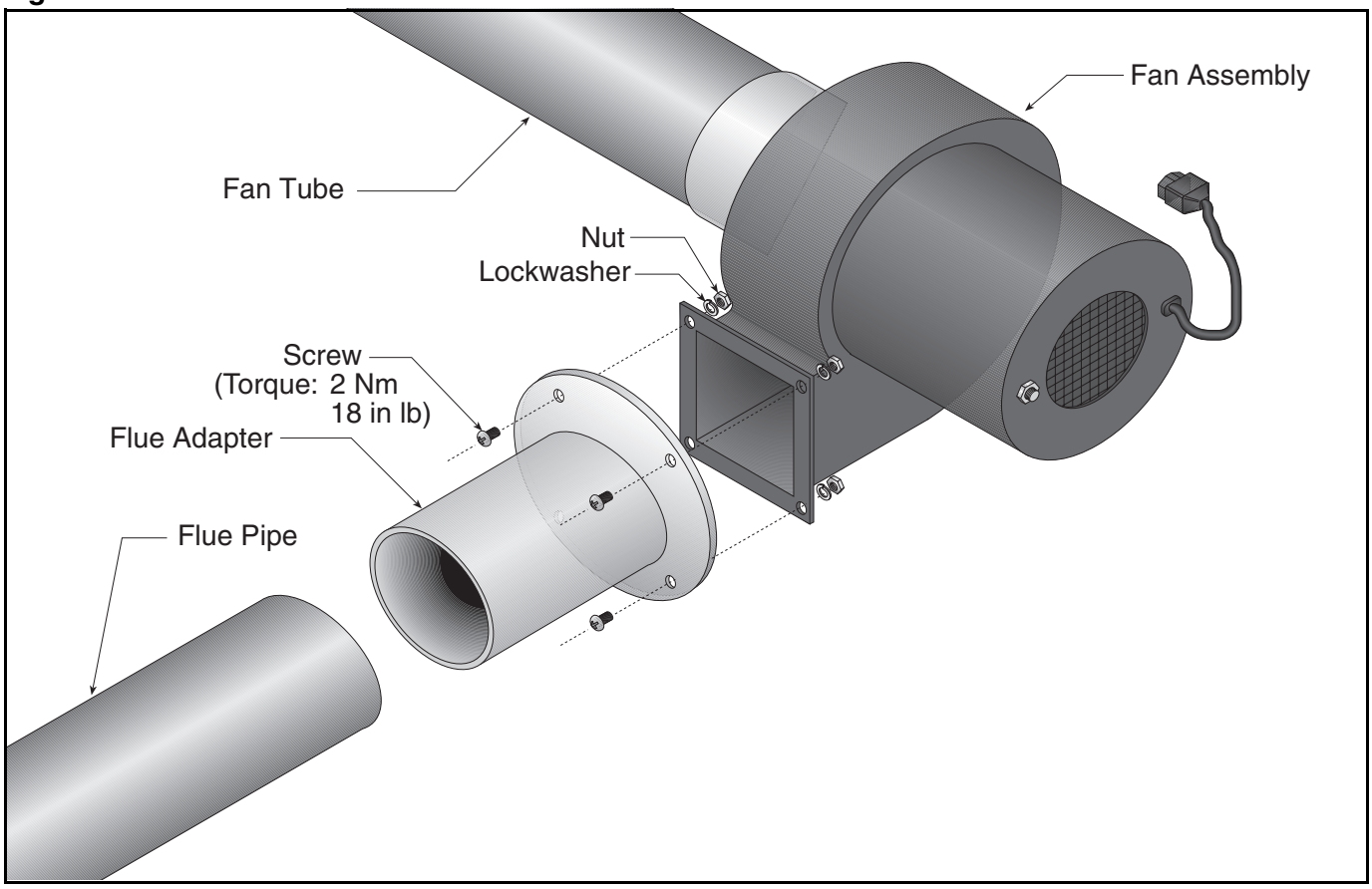
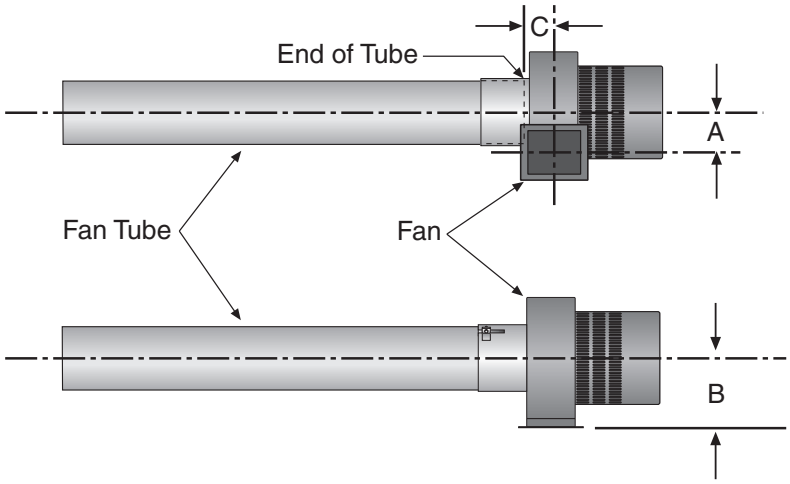


Figure 29: Flue Connection Dimensions



Heater Model	Fan Model	A	B	C	Part Number
BH 15-30	Torin DSF-133-42	79 mm	95 mm	45 mm	C2374B
BH 35-45	Torin DSA-524-202	86 mm	102 mm	51 mm	C2324B
BH 50	Magnetek JF1G	89 mm	102 mm	51 mm	90710000

11.4 Outside Combustion Air Supply

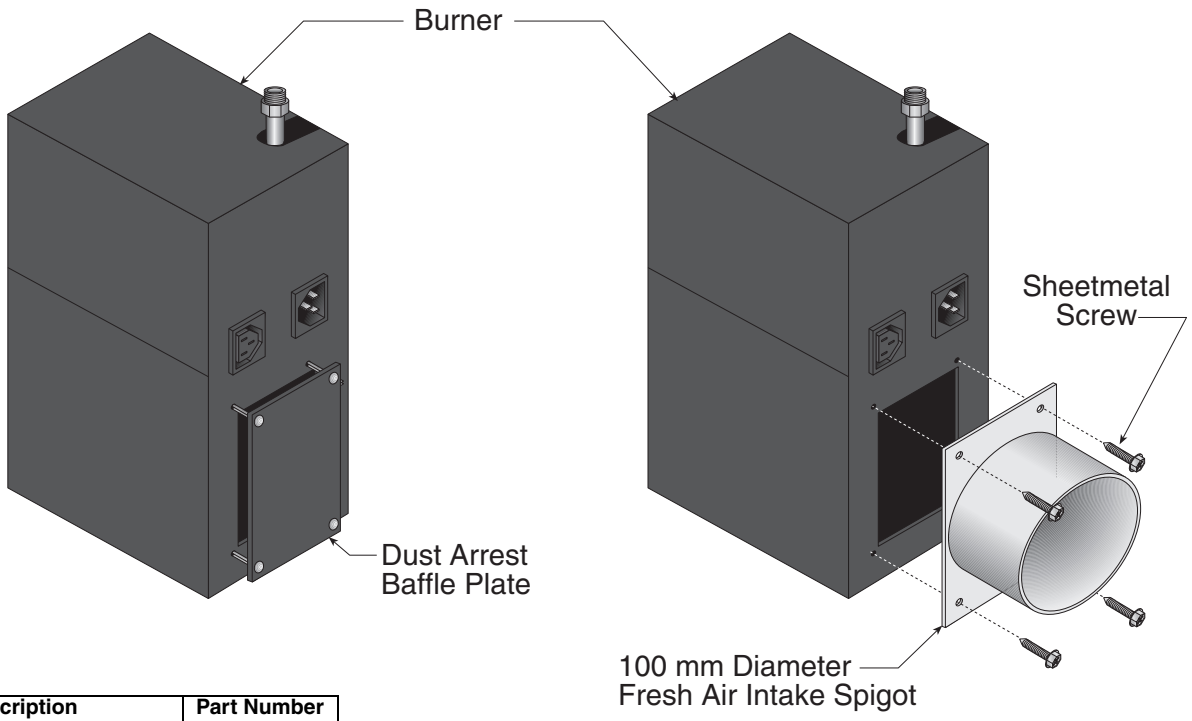
Where necessary, clean air may be ducted into the burner box through an added spigot on the back of the burner box replacing the existing dust arrest baffle plate.
See Page 41, Section 11.1 for recommendations on duct length. Air duct should be as straight as possible. Do not use bends in excess of 45°. Consult the manufacturer if more than 2 x 45° offset bends are necessary. The fresh air duct must be self supporting.

11.4.1 Air Supply Requirements

When fresh air duct is used, follow one of these rules:

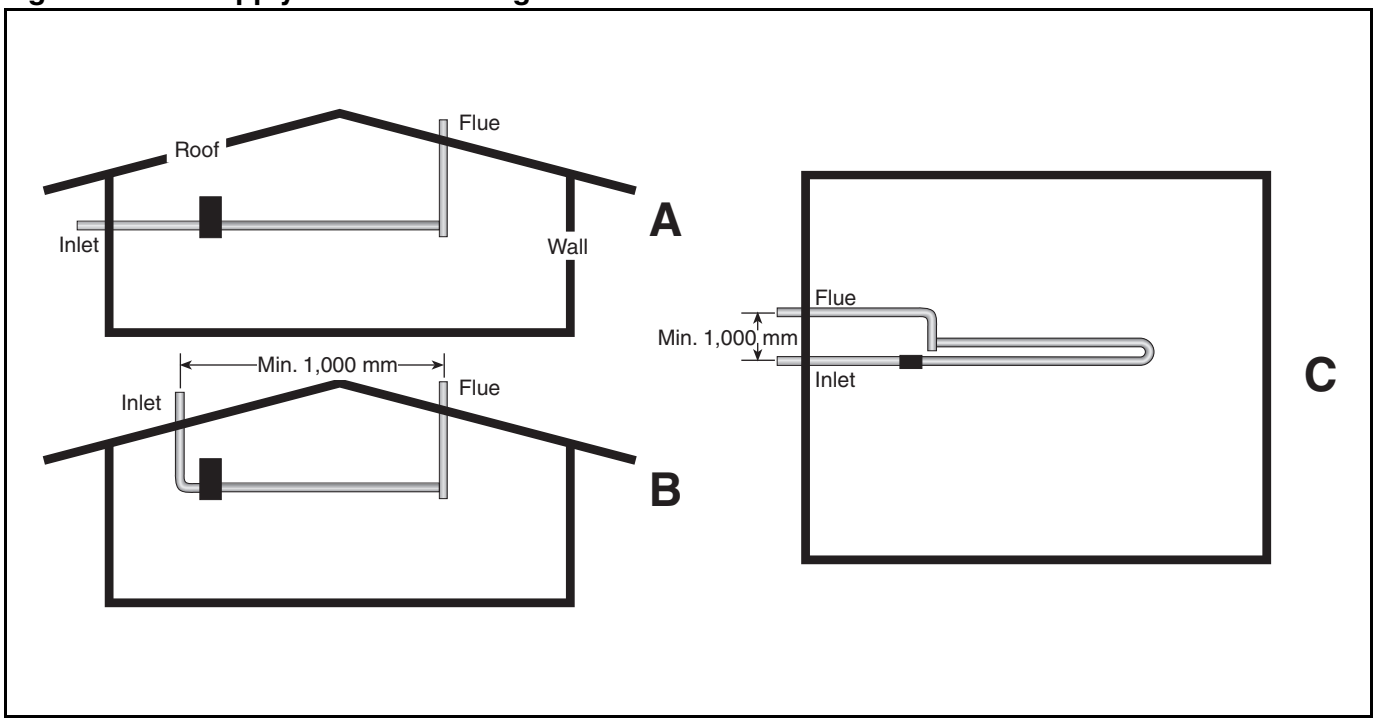
- The flue must penetrate the roof while fresh air can penetrate any wall. (*See Figure 31*, *A*)
- The flue and fresh air supply must penetrate the same roof, at a minimum of 1 m apart. (*See Figure 31*, *B*)
- The flue must penetrate 1 m higher than the fresh air inlet on the same wall. (*See Figure 31*, *C*)

Figure 30: Fresh Air Intake Spigot



Description	Part Number
Dust Arrest Baffle	07230000
Fresh Air Intake Spigot	07260000

Figure 31: Air Supply with Flue Configurations



11.5 Common Duct

When using a common air inlet duct, always ensure that the area of the common air inlet duct represents the area of all air ducts.

SECTION 12: GAS PIPING

⚠ WARNING

Fire Hazard

Tighten gas line fittings to connect gas supply according to *Figure 32*.

Flex gas line can crack when twisted.

Gas line moves during normal operation.

Failure to follow these instructions can result in death, injury or property damage.

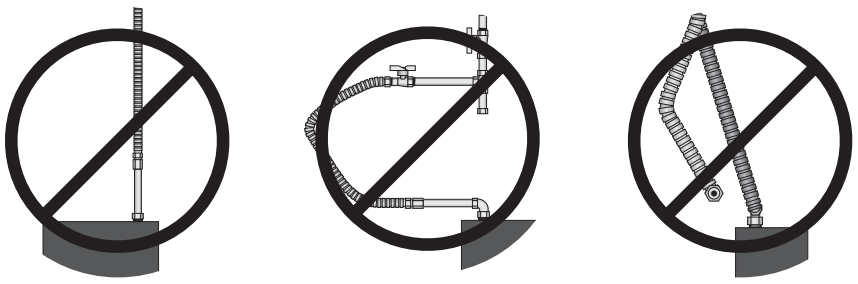
It is important that the gas supply pipe and the electrical connections do not support any of the heater's weight. A gas meter is connected to the service pipe by the Gas Supply Company. An existing meter should be checked, preferably by the Company to ensure that the meter is adequate to deal with the rate of gas supply required.

Installation pipes must be fitted in accordance with National Standards. Pipe work from the meter to the heater(s) must be of adequate size. Pipes of smaller size than the heater inlet gas connection should not be used.

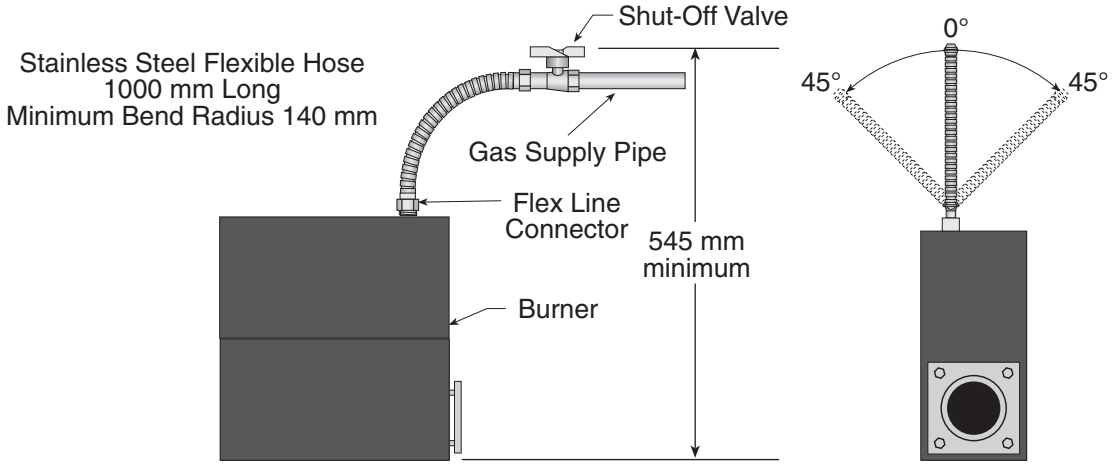
Connect the heater to the gas supply using an approved flexible gas hose of 1 m length and a shut-off valve. *See Page 44, Figure 32*.

IMPORTANT - the complete installation must be tested for gas soundness and be purged in accordance with National Standards.

Figure 32: Gas Connection with Stainless Steel Flex Connector



Hold gas nipple securely with pipe wrench when attaching the flex gas connector.



SECTION 13: WIRING

⚠ WARNING

Electrical Shock Hazard

Disconnect electrical power and gas supply before servicing.

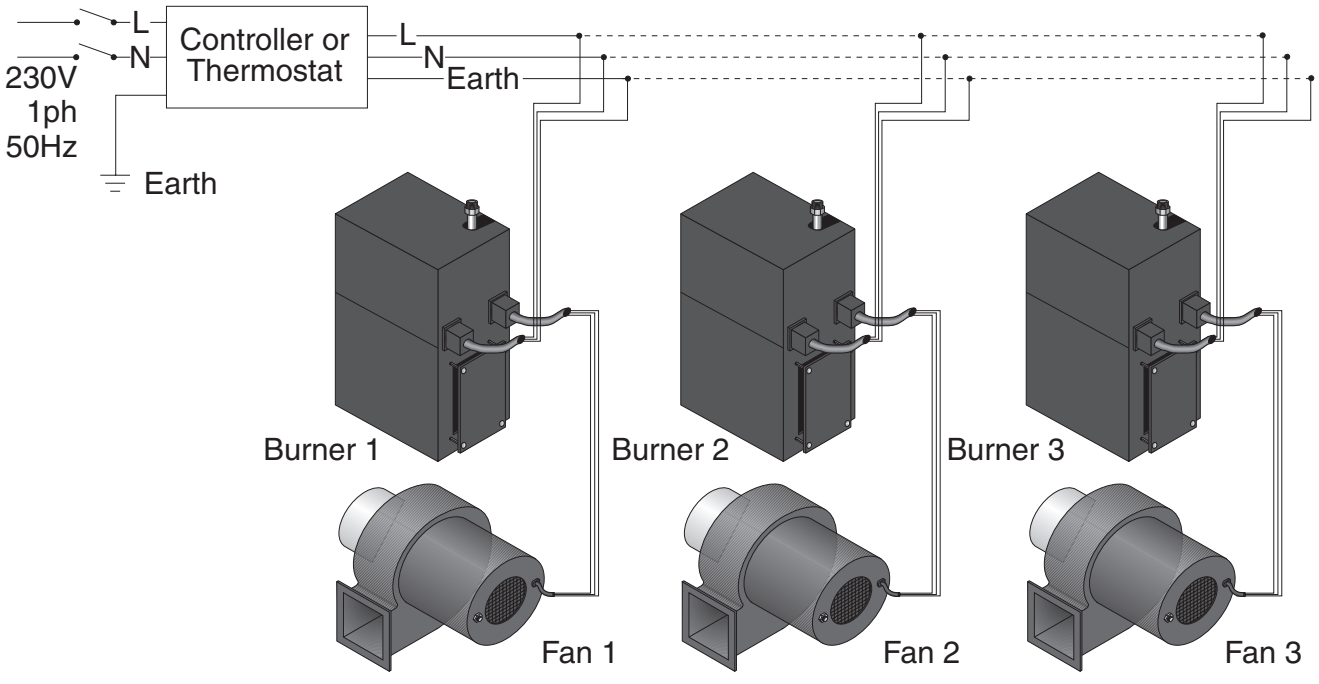
This appliance must be connected to a properly earthed electrical source.

Failure to follow these instructions can result in death or electrical shock.

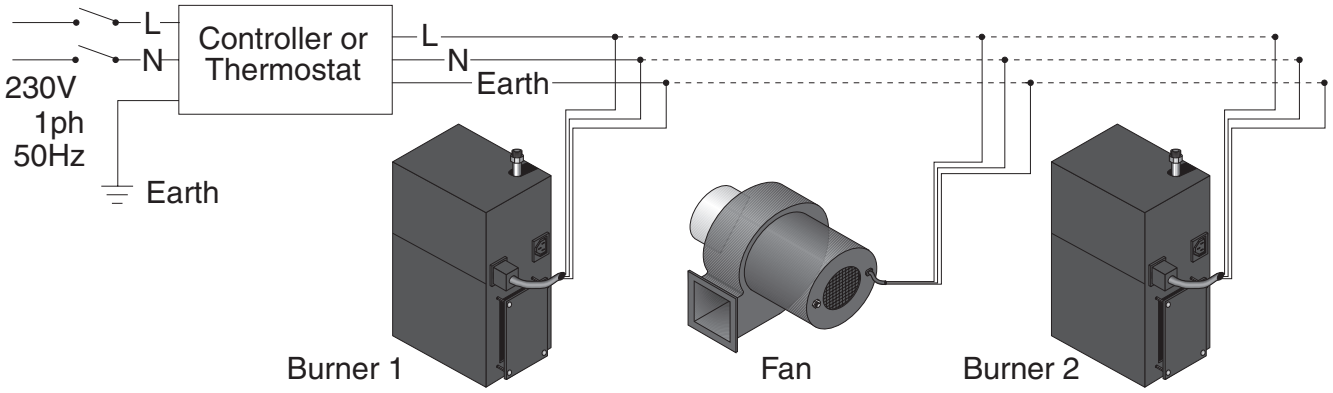
Connect to the electrical supply using a 3 pin plug via a locally mounted double pole fused switch having a minimum disconnection of 3 mm on each pole. This switch should be fused to 3 amps. The burner is fused at 2 amps. There are no control connections in the standard burner. Control is affected by interruption of the main power inlet. *See Page 45, Section 13.1 through Page 47, Section 13.4* for the external wiring details for the single-burner, double linear and multiburner heater systems.

All wiring must comply with current wiring regulations and any local regulations which may apply. Always switch off the supply to the burner and disconnect by removing the plug before removing the burner side panel.

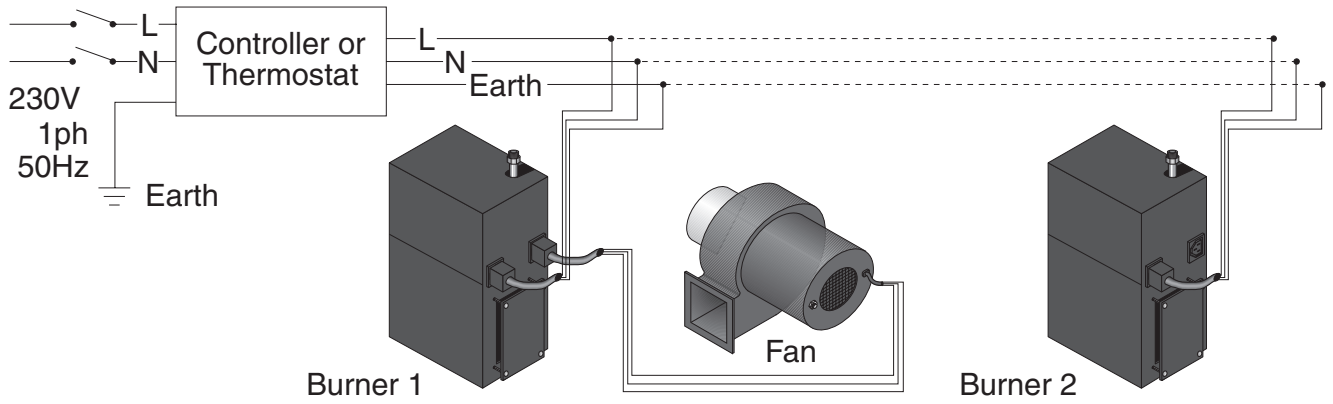
13.1 RADIANT SERVICES™ Typical External Wiring Diagram (Linear or U-Tube)



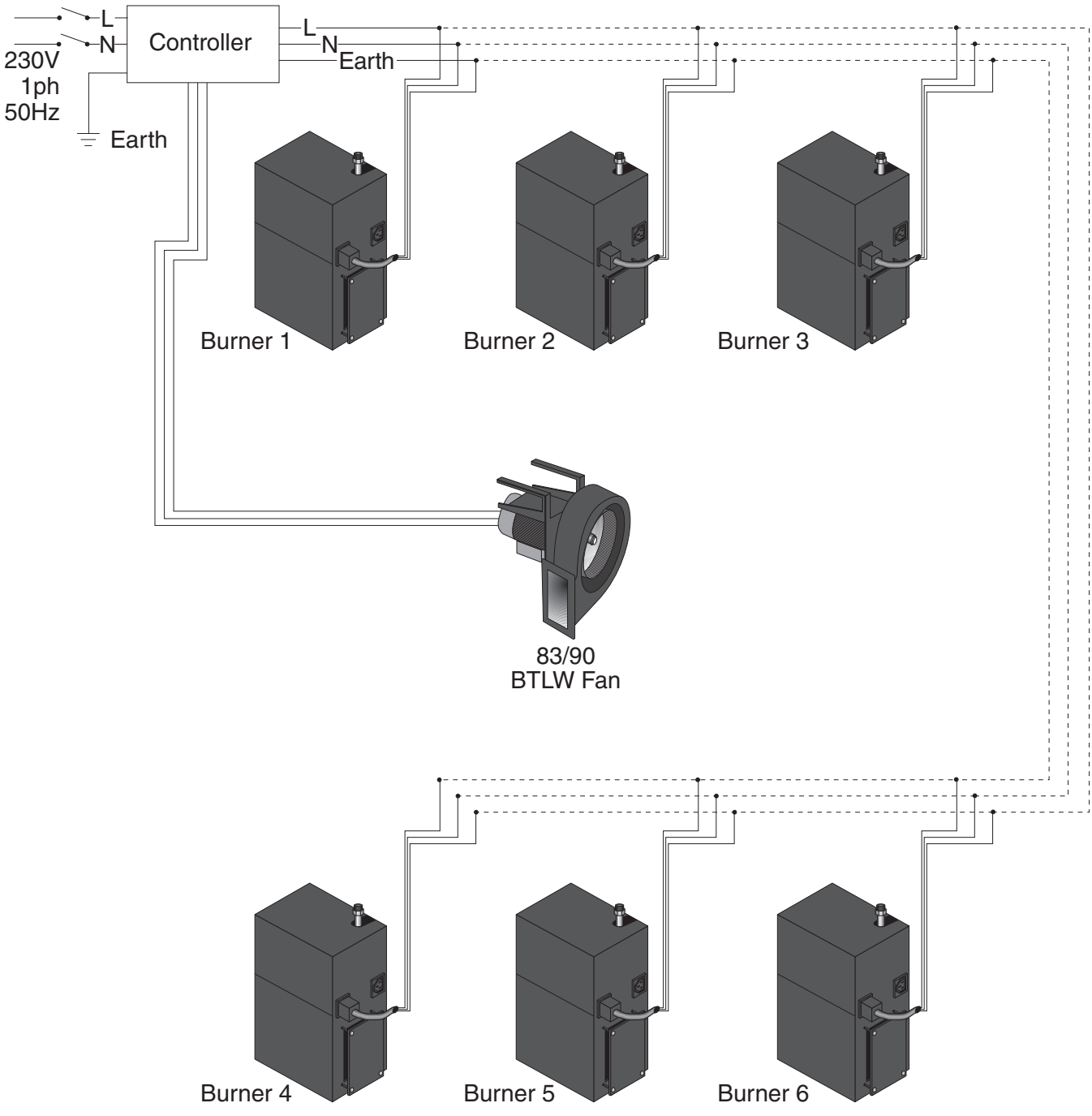
13.2 RADIANT SERVICES™ Typical External Wiring Diagram (Double Linear Option 1)



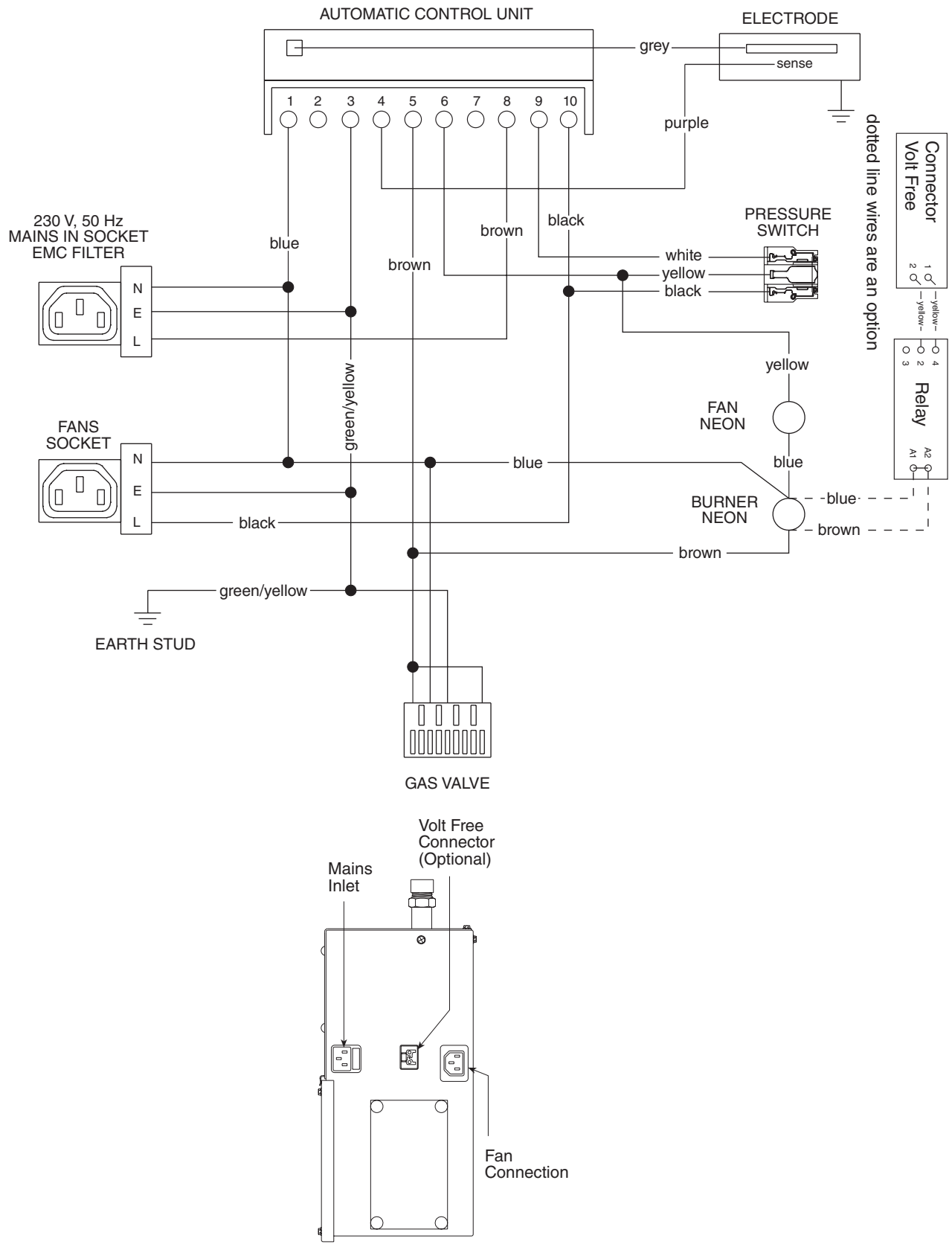
13.3 RADIANT SERVICES™ Typical External Wiring Diagram (Double Linear Option 2)



13.4 RADIANT SERVICES™ Typical External Wiring Diagram (Multiburner)

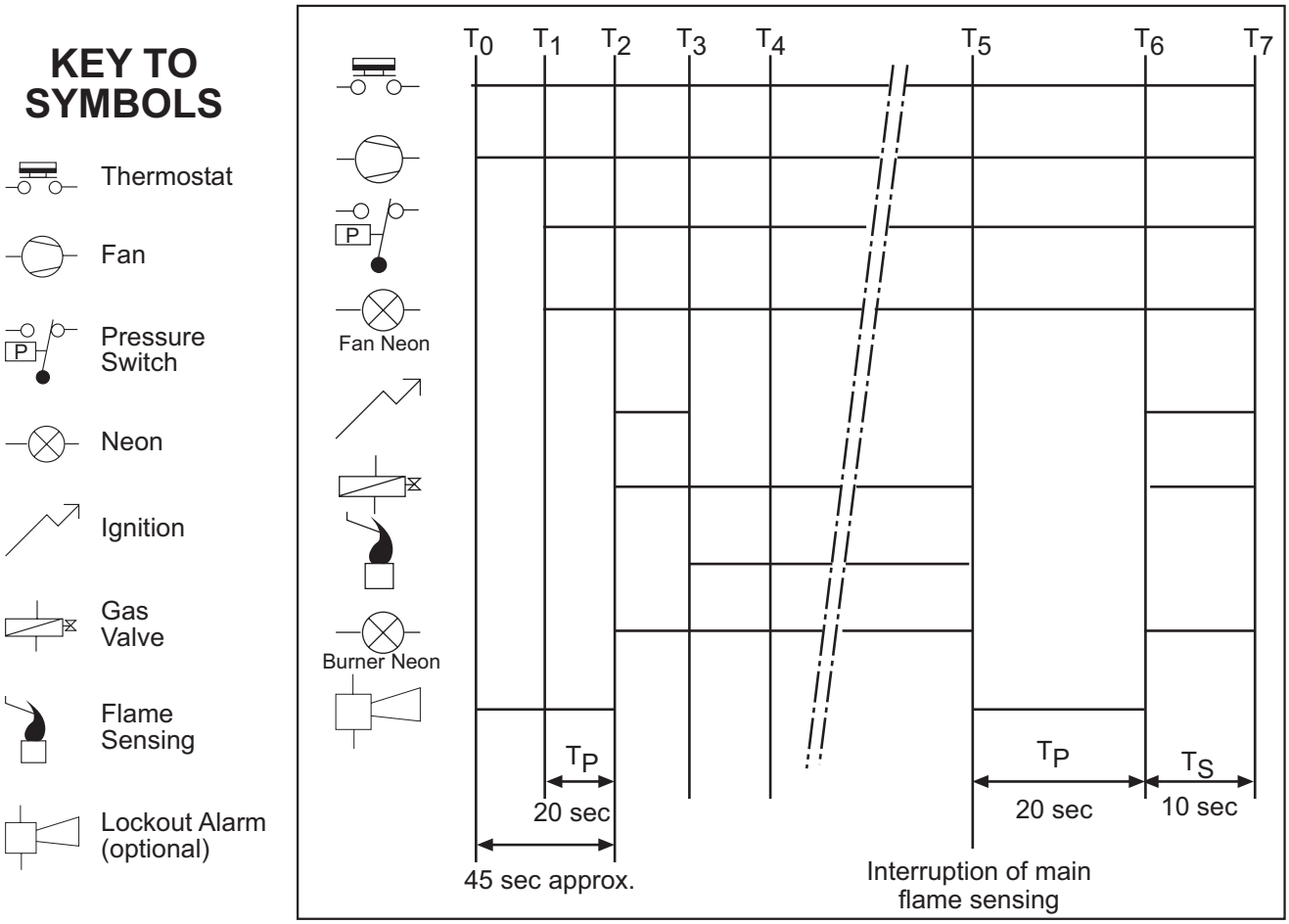


13.5 RADIANT SERVICES™ Internal Wiring Diagram



SECTION 14: OPERATION

Figure 33: Sequence of Operation Chart



14.1 Heater Lockout Indication (Optional)

In case of flame loss during operation of the heater, a volt free contact relay is closed which enables the RADIANT SERVICES™ Controller, BMS systems, etc. to receive a signal and indicate precisely which heater has failed. If your heater is equipped with "Heater Lockout" indication (volt free), an additional wire has to be installed from the heater's "volt free connector" to the monitoring computer. *See Page 49, Figure 33* for alarm sequence. NOTE: the 45 second pre purge signal must be suppressed.

14.2 Testing

Establish that a satisfactory purged gas supply and an electrical supply is available to the heater. Ensure that all time clocks and thermostats are set to call for heat.
With the gas supply cut off at the appliance isolating cock and the electrical supply isolated by switching off at the local switch and removing the appliance inlet plug, open the control chamber secured by the centre screw. Loosen the sealing screw from the pressure test point and remove the cover cap from the governor.

Turn on the gas supply and connect appliance electrical plug. Ensure that the timer or thermostat, if fitted, are set to call for full gas rate. Switch on at the local switch. The sequence as described should take place. If not, refer to detailed fault finding sequence. When flame is established, check the gas pressure reading and adjust if necessary. Refer to burner data label.
Check the gas pressure at the outlet of the gas valve. *See Page 62, Section 18.9.1* or *See Page 63, Section 18.9.2* for pressure settings or refer to the data plate.
Switch off the electrical supply (shutting down the heater), remove pressure gauge - tighten pressure test point screw, ensuring a tight gas seal. Replace governor cover cap. Close burner side cover.

14.3 Commissioning (Multiburner)

14.3.1 Establish that a satisfactory purged gas supply and an electrical supply is available to the heater.

14.3.2 ENSURE that all the dampers are in the fully open position.

14.3.3 With the gas supply off at each of the burners and the electrical supply isolated, open the control chamber secured by two self tapping screws.

14.3.4 Ensure that all time clocks and thermostats are set to call for heat.

14.3.5 Switch on the electrical supply at the main isolator. This will start the exhaust fan.

14.3.6 Balancing cold suction

Check each burner vacuum by connecting an inclined pressure gauge to the tee on the pressure switch inlet side in the burner. Adjust the damper so that the suction is 1.9 mbar. Repeat for each burner.

14.3.7 Starting at the end burner (furthest from the exhaust fan), with the inclined pressure gauge connected as described above. Turn on the gas supply and connect appliance electrical plug, reset the pressure switch by removing suction from the inlet side of the pressure switch waiting several seconds and reconnecting. The start up sequence described on *Page 49, Section 14* should take place. If not, refer to detailed fault finding sequence. When flame is established, check the gas pressure reading and adjust if necessary. See data label.

Check the gas pressure at the outlet of the gas valve. *See Page 62, Section 18.9.1* or *See Page 63, Section 18.9.2* for pressure settings or refer to the data plate.
Switch off the electrical supply (shutting down the heater), remove pressure gauge - refit pressure testpoint screw, ensuring a tight gas seal. Replace governor cover cap.
Repeat this procedure for each burner in the system.
Close the control chamber and secure with two sheet metal screws.

14.3.8 Balancing Hot Suction

Reconnect all the burners on the system and allow them to reach full operating temperature (approximately 20 minutes). Return to each burner and recheck the hot suctions at the tee on the inlet to the pressure switch. Readjust the damper so that the hot suction of 1.5 mbar is achieved and lock the damper in position.

14.4 System Checks

Switch on again at the local switch to ensure smooth ignition. Carry out the following system checks:
When running, turn off the gas supply at the appliance. The heater will immediately shut down followed by one attempt at restoration followed by lockout.
Linear and Double Linear only:
When running, disconnect the fan plug from the burner. The unit should shut down within three seconds, proving operation of the pressure switch.

14.5 User Instructions

After satisfactory testing, ensure that the client is fully aware of the operation of the system. Bring this manual to the attention of the user or purchaser; instruct them in the safe operation of the heater(s). Advise the user that if the system is unflued, any reduction in the natural ventilation of the building may require a flue to be fitted, or additional ventilation grilles will be required.

SECTION 15: SERVICING INSTRUCTIONS

IMPORTANT: Never use the heater as a support for ladders or other access equipment. Always test for gas soundness with a suitable detection fluid after completing any servicing or exchange of gas carrying component. On completion of any service/fault finding tasks which require the breaking and remaking of electrical connections, the checks:- A:Earth Continuity, B:Polarity and C:Resistance to Earth must then be repeated.

15.1 Annual Procedure

Carry out the following procedure annually. The preferred time would be immediately before the winter heating period. If very dirty conditions arise, it may be necessary to carry out this procedure more often. If the unit takes in air through an air duct or filter assembly, more frequent service may be necessary.

15.1.1

Isolate the heater from the gas and electricity supply. Remove the fan plug from the burner. Unscrew the securing screws on the burner flange. The burner can now be removed. Unscrew the securing screw on the fan flange spigot. The fan can now be removed.

15.1.2

Remove the fan and burner independently to floor level and clean both items internally using a soft brush and compressed air, if available. Take care not to damage the internal parts of the burner. Check fan impeller for cleanliness and free rotation. When removing burner, take care not to disturb the gasket on the flanged burner tube.

15.1.3

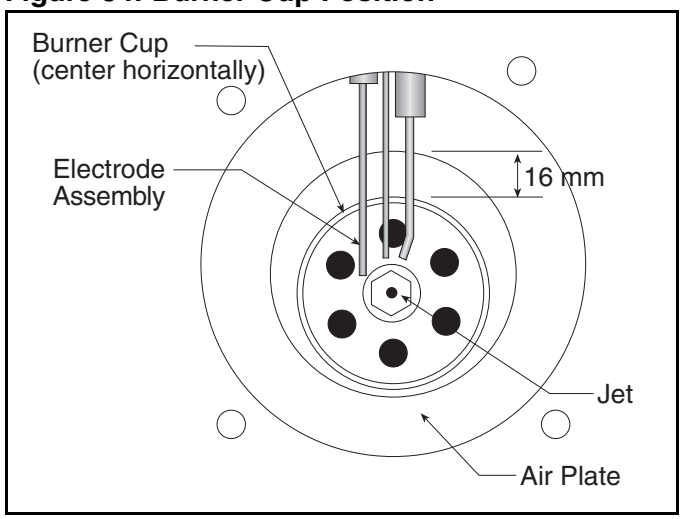
The electrodes are an integral part of the burner. To check spark gap, remove the securing screws on the electrode and withdraw it ensuring the gasket is not damaged. Spark gap on electrode should be approximately 3 mm.
With burner and fan removed, clean the outer surfaces of the tubes using a brush and wipe the inner surface of the reflector with a soft damp cloth - use a household detergent if necessary. Never use abrasive cleaners on the reflectors.
Reassemble the burner and fan in reverse order. Carry out the Testing Procedure. *See Page 49, Section 14.2*.

15.2 Component Removal

First, isolate the heater from the gas and electricity supply.
Entry to the burner assembly is gained by removing the two (2) door screws and opening the hinged side cover. Entry to the combustion chamber is gained by removing the combustion chamber cover (7 screws).

15.2.1 Electrode

Figure 34: Burner Cup Position



15.2.2 Burner Head/Injector Jet

When the cover is removed completely, the burner assembly is exposed. Unscrew the burner cup. Remove brass injector jet (orifice). Replace in reverse sequence.

15.2.3 Solenoid Valve/Governor

Remove burner head. Unscrew two (2) screws securing the solenoid/governor body bracket. Withdraw the four (4) wires between the solenoids. The solenoid/governor and fittings can now be withdrawn from the compartment. The solenoid(s) can be removed from the body by unscrewing central screw. Replace in reverse sequence. Note: Earth is green/yellow.

15.2.4 Automatic Flame Control Unit

Remove black ignition lead. Withdraw the 10 point edge connector. Unscrew two (2) screws from the cover. Replace if faulty. Refit in reverse sequence.

15.2.5 Pressure Switch

Disconnect the two (2) silicone tubes. Remove wires from the three (3) blades. Remove two (2) screws which secure the pressure switch to the burner. Remove pressure switch.
Replace pressure switch, if faulty, and refit in reverse sequence ensuring that the rubber tubes are reconnected to the switch correctly.
Note: Wires fitted as follows:
NO - Yellow
NC - White
Common - Black

15.2.6 Neons

Remove the two push on connectors and remove the neons by pushing downwards. Replace in reverse sequence.

15.3 Maintenance Checklist

⚠ WARNING

Explosion Hazard

Service and annual inspection must be done by a contractor qualified in the installation and service of gas-fired heating equipment or your gas supplier.

Turn off gas and electrical supplies before performing service or maintenance.

Failure to follow these instructions can result in death, injury or property damage.

Installation Code and Annual Inspections:

All installations and service of RADIANT SERVICES™ equipment must be performed by a contractor qualified in the installation and service of equipment sold and supplied by Radiant Services and conform to all requirements set forth in the RADIANT SERVICES™ manuals and all applicable governmental authorities pertaining to the installation, service and operation of the equipment.

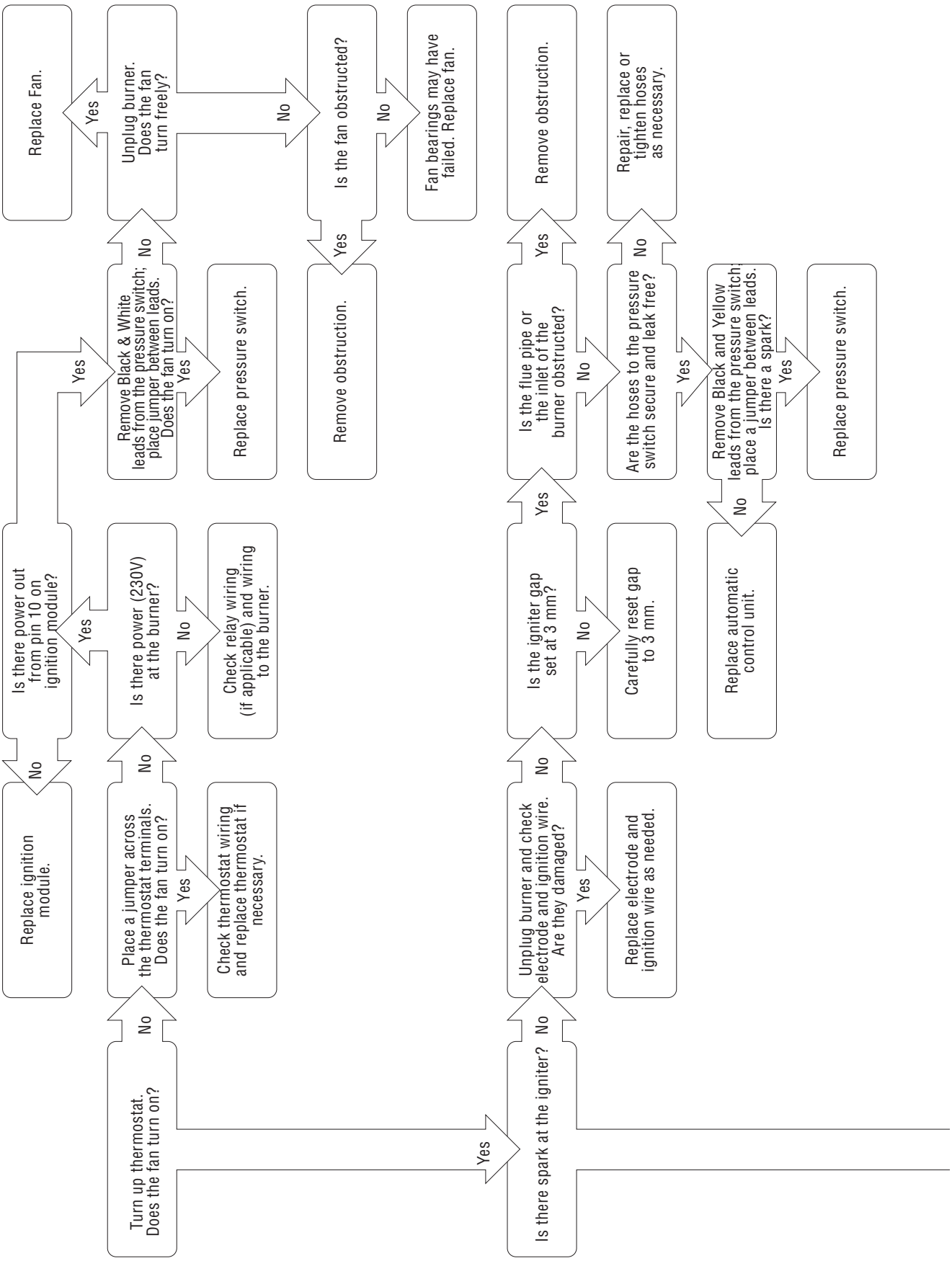
To help facilitate optimum performance and safety, Radiant Services recommends that a qualified contractor annually inspect your RADIANT SERVICES™ equipment and perform service where necessary, using only replacement parts sold and supplied by Radiant Services.

The Vicinity of the Heater	Do not store or use flammable objects, liquids or vapours near the heater. Immediately remove these items if they are present. *See Page 2, Section 3*.
Vehicles and Other Objects	Maintain the clearances to combustibles. Do not hang anything from, or place anything on, the heater. Make sure nothing is lodged underneath the reflector, in between the tubes or in the decorative or protective grilles (included with select models). Immediately remove objects in violation of the clearances to combustibles. *See Page 2, Section 3*.
Reflector	Make sure there is no dirt, sagging, cracking or distortion. Do not operate if there is sagging, cracking or distortion. Make sure reflectors are correctly overlapped. Clean outside surface with a damp cloth.
Vent Pipe	Venting must be intact. Using a flashlight, look for obstructions, cracks on the pipe, gaps in the sealed areas or corrosion. The area must be free of dirt and dust. Remove any carbon deposits or scale using a wire brush. *See Page 41, Section 11*.
Outside Air Inlet	Inlet must be intact. Look for obstructions, cracks on the pipe, gaps in the sealed areas or corrosion. The area must be free of dirt and dust. Clean and reinstall as required.
Tubes	Make sure there are no cracks. Make sure tubes are connected and suspended securely. *See Page 8, Section 5* Make sure there is no sagging, bending or distortion.
Gas Line	Check for gas leaks. *See Page 44, Section 12*.

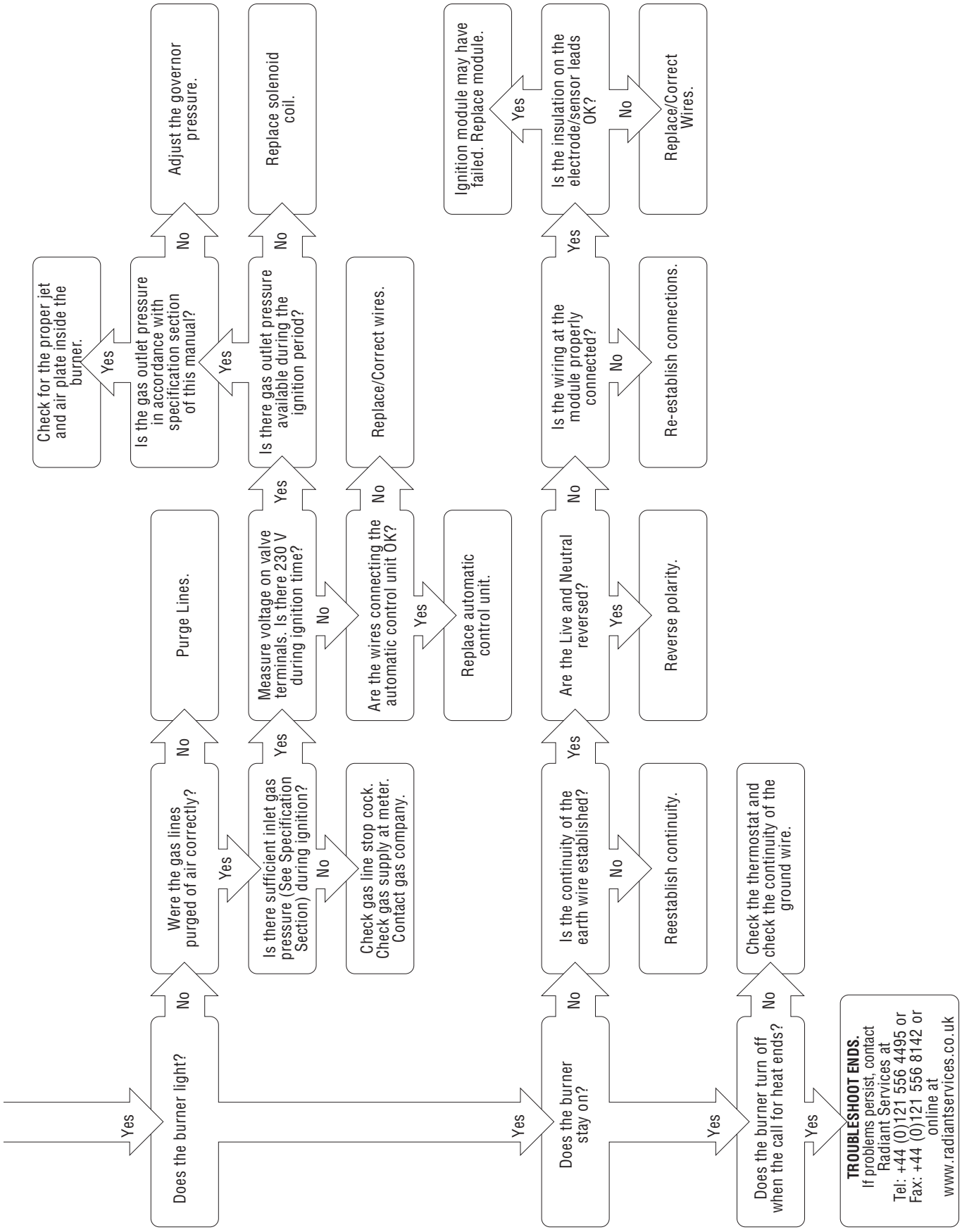
Burner Observation Window	Make sure it is clean and free of cracks or holes. Clean and replace as required.
Blower Scroll, Wheel and Motor	Compressed air or a vacuum cleaner may be used to clean dust and dirt.
Burner Cup and Orifice	Clear of obstructions (even spider webs will cause problems). Carefully remove any dust and debris from the burner.
Electrode	Replace if there are cracked ceramics, excessive carbon residue, or erosion of the electrode. The electrode gap should be 3 mm.
Thermostat	There should be no exposed wire or damage to the thermostat. *See Page 45, Section 13*.
Suspension Points	Make sure the heater is hanging securely. Look for signs of wear on the chain or ceiling. *See Page 8, Section 5*.
Sports Hall Guard, Decorative and Protective Grilles (optional)	The grille must be securely attached. If the grille is loose or off, contact a contractor qualified in the installation and service of gas-fired heating equipment for repair. Check that side reflector extensions are installed correctly and secured in place if necessary (decorative grille only). *See Page 34, Section 10.1 and Page 37, Section 10.4* Make sure shield is installed correctly and secured in place if necessary. (Decorative grille only.) *See Page 36, Section 10.3.2*.

SECTION 16: TROUBLESHOOTING

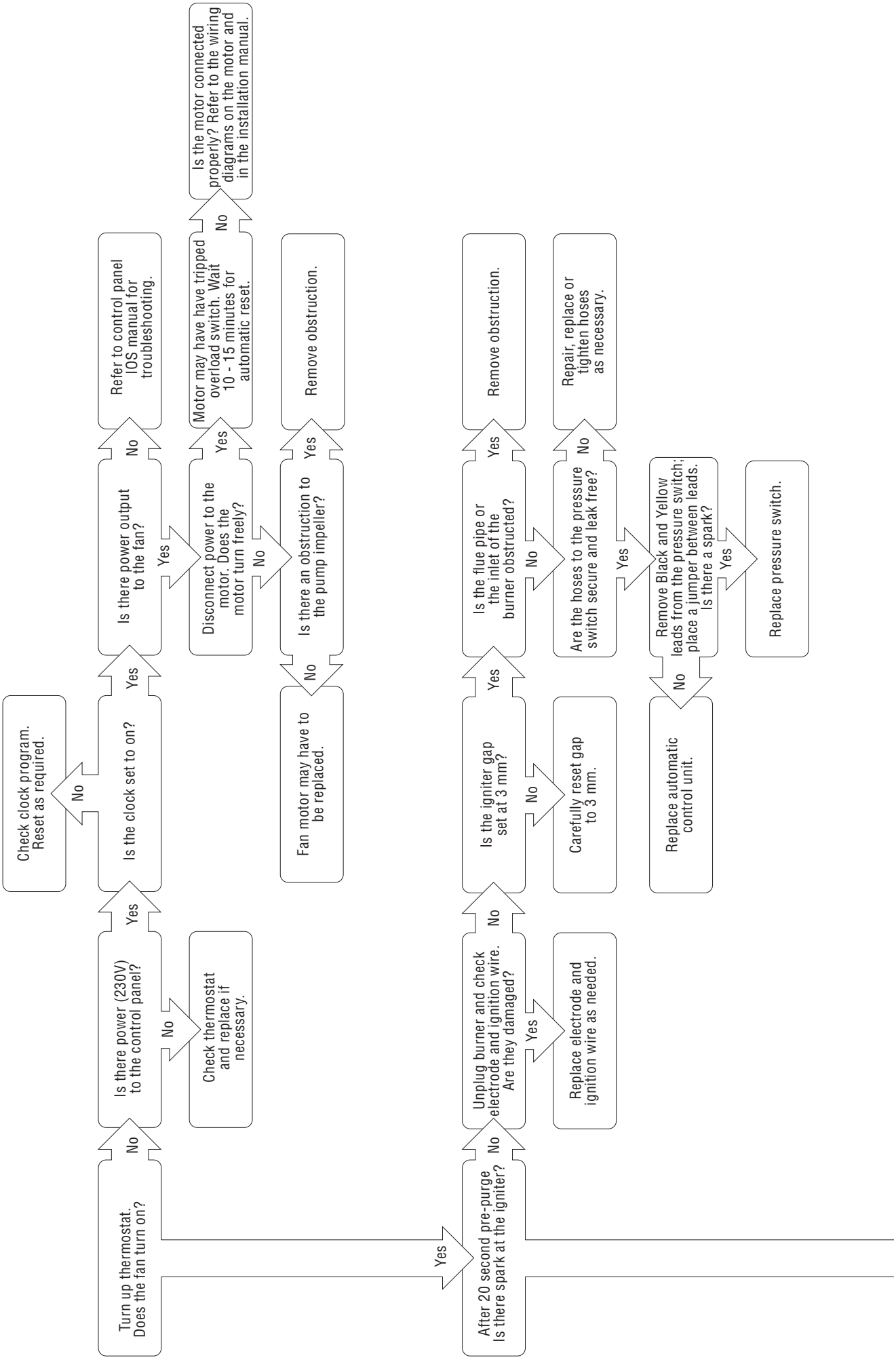
16.1 Troubleshooting Flow Chart (Linear, Double Linear and U-Tube)


Turn up thermostat. Does the fan turn on?
No
Yes
Place a jumper across the thermostat terminals. Does the fan turn on?
No
Yes
Check thermostat wiring and replace thermostat if necessary.
Is there power out from pin 10 on ignition module?
No
Yes
Is there power (230V) at the burner?
No
Yes
Check relay wiring (if applicable) and wiring to the burner.
Replace ignition module.
Is there spark at the igniter?
No
Yes
Unplug burner and check electrode and ignition wire. Are they damaged?
No
Yes
Replace electrode and ignition wire as needed.
Is the igniter gap set at 3 mm?
No
Yes
Carefully reset gap to 3 mm.
Is the flue pipe or the inlet of the burner obstructed?
No
Yes
Remove obstruction.
Are the hoses to the pressure switch secure and leak free?
No
Yes
Repair, replace or tighten hoses as necessary.
Remove Black and Yellow leads from the pressure switch; place a jumper between leads. Is there a spark?
No
Yes
Replace pressure switch.
Remove Black & White leads from the pressure switch; place jumper between leads. Does the fan turn on?
No
Yes
Replace pressure switch.
Unplug burner. Does the fan turn freely?
No
Yes
Replace Fan.
Is the fan obstructed?
No
Yes
Remove obstruction.
Fan bearings may have failed. Replace fan.

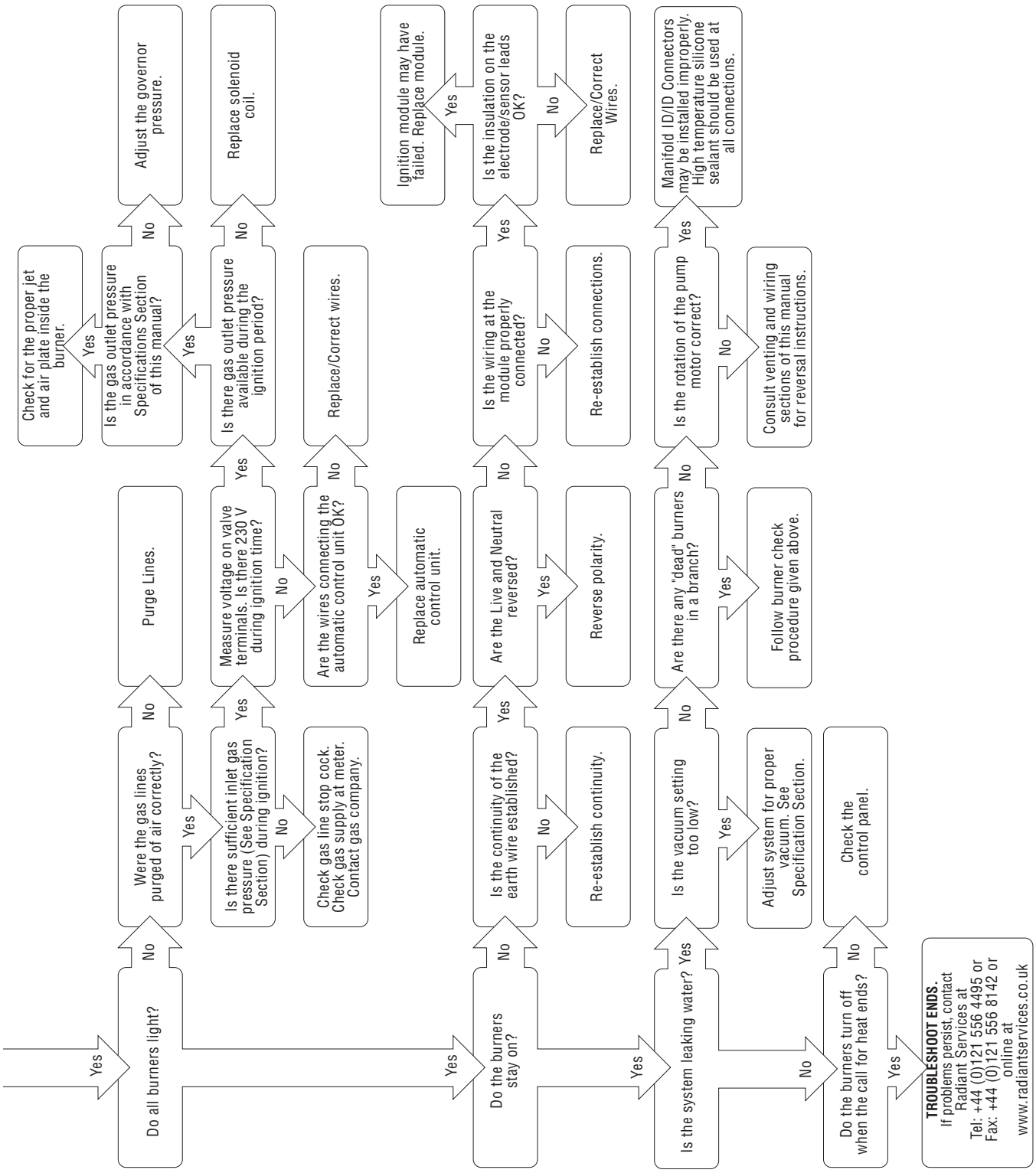
Troubleshooting Flow Chart (Linear, Double Linear and U-Tube)



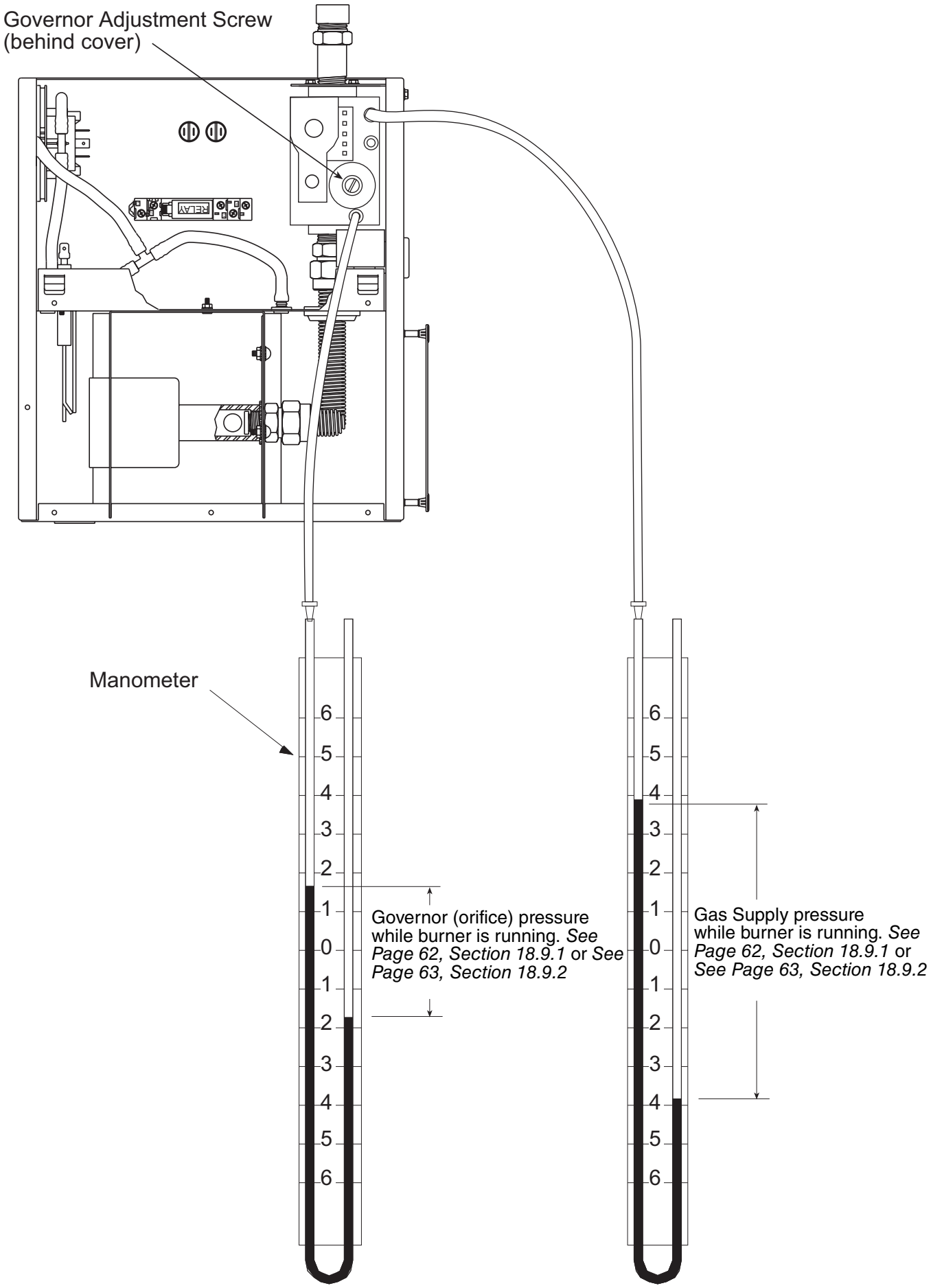
16.2 Troubleshooting Flow Chart (Multiburner)


Turn up thermostat. Does the fan turn on?
No
Is there power (230V) to the control panel?
No
Check thermostat and replace if necessary.
Yes
Is the clock set to on?
No
Check clock program. Reset as required.
Yes
Is there power output to the fan?
No
Refer to control panel IOS manual for troubleshooting.
Yes
Disconnect power to the motor. Does the motor turn freely?
Yes
Motor may have have tripped overload switch. Wait 10 - 15 minutes for automatic reset.
No
Is the motor connected properly? Refer to the wiring diagrams on the motor and in the installation manual.
No
Is there an obstruction to the pump impeller?
Yes
Remove obstruction.
No
Fan motor may have to be replaced.
Yes
After 20 second pre-purge Is there spark at the igniter?
No
Unplug burner and check electrode and ignition wire. Are they damaged?
Yes
Replace electrode and ignition wire as needed.
No
Is the igniter gap set at 3 mm?
No
Carefully reset gap to 3 mm.
Yes
Is the flue pipe or the inlet of the burner obstructed?
Yes
Remove obstruction.
No
Are the hoses to the pressure switch secure and leak free?
No
Repair, replace or tighten hoses as necessary.
Yes
Remove Black and Yellow leads from the pressure switch; place a jumper between leads. Is there a spark?
No
Replace automatic control unit.
Yes
Replace pressure switch.

Troubleshooting Flow Chart (Multiburner)

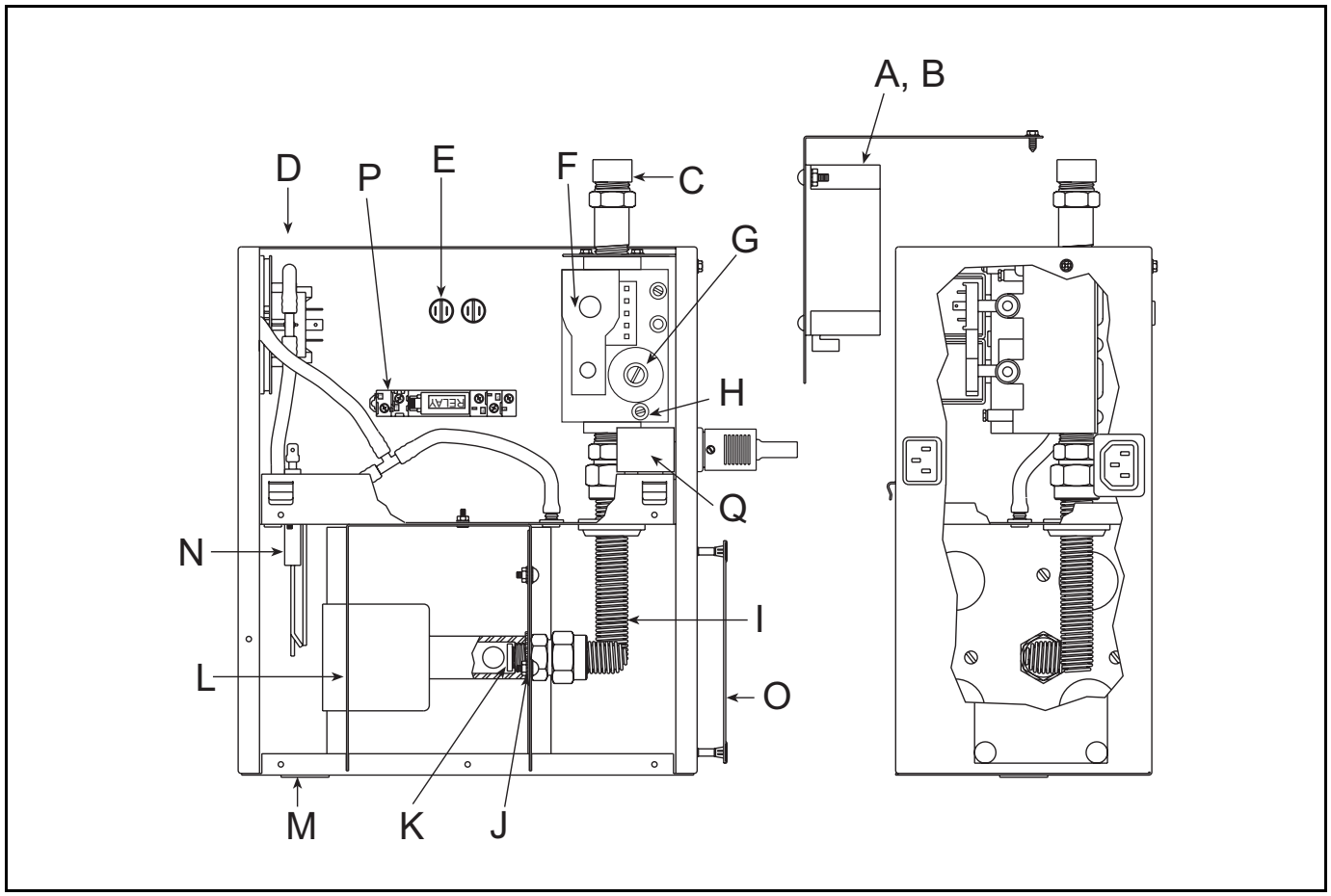

Yes
Do all burners light?
No
Were the gas lines purged of air correctly?
No
Purge Lines.
Yes
Is there sufficient inlet gas pressure (See Specification Section) during ignition?
Yes
Measure voltage on valve terminals. Is there 230 V during ignition time?
Yes
Is there gas outlet pressure available during the ignition period?
No
Replace solenoid coil.
No
Check gas line stop cock. Check gas supply at meter. Contact gas company.
No
Are the wires connecting the automatic control unit OK?
No
Replace/Correct wires.
Yes
Replace automatic control unit.
Yes
Do the burners stay on?
No
Is the continuity of the earth wire established?
No
Re-establish continuity.
Yes
Are the Live and Neutral reversed?
Yes
Reverse polarity.
No
Is the wiring at the module properly connected?
No
Re-establish connections.
Yes
Ignition module may have failed. Replace module.
Yes
Is the insulation on the electrode/sensor leads OK?
No
Replace/Correct Wires.
Yes
Is the system leaking water?
Yes
Is the vacuum setting too low?
Yes
Adjust system for proper vacuum. See Specification Section.
No
Are there any "dead" burners in a branch?
Yes
Follow burner check procedure given above.
No
Is the rotation of the pump motor correct?
No
Consult venting and wiring sections of this manual for reversal instructions.
Yes
Manifold ID/ID Connectors may be installed improperly. High temperature silicone sealant should be used at all connections.
Yes
Is the gas outlet pressure in accordance with Specifications Section of this manual?
No
Adjust the governor pressure.
Yes
Check for the proper jet and air plate inside the burner.
No
Check the control panel.
Yes
Do the burners turn off when the call for heat ends?
No
TROUBLESHOOT ENDS.
If problems persist, contact Radiant Services at
Tel: +44 (0)121 556 4495 or
Fax: +44 (0)121 556 8142 or
online at
www.radiantservices.co.uk

16.3 Manifold Gas Pressure Setting



SECTION 17: REPLACEMENT PARTS

Use only genuine RADIANT SERVICES™ replacement parts.
Use of parts not specified by Radiant Services voids warranty.
Failure to follow these instructions can result in property damage.



Item	Description	Part Number
A	Automatic Control Unit	90438701
B	Fuse, 2 amp, 5 mm x 20 mm	91319900
C	Flex Line Adapter	91220700
D	Pressure Switch for BH25 - BH55, BH50EF, (0.23" w.c.) BH15 and BH20 (0.32" w.c.) BH30EF and BH35EF (0.41" w.c.) BH45EF (0.47" w.c.) BH40EF (0.79" w.c.) BH25EF (0.59" w.c.)	 90439801 90439802 90439803 90439804 90439808 90439809
E	Amber Neon Lamp	91320602
F	Gas Valve	90033101
G	Governor Screw	N/A
H	Outlet Pressure Tap	N/A
I	Flex Manifold	03090702T
J	Star Washer	96212100
K	Jet Orifice (See *Section 18.9.1*)	N/A
L	Burner Cup Assembly	03020100
M	Mica Window Assembly	02552303

Item	Description	Part Number
N	Electrode Assembly	90427403
N/S	Electrode Gasket	02558501
O	Dust Arrest Baffle Plate	07230000
P	Relay Volt Free Contact (Optional) Relay Volt Free Base (Optional)	C1049B C1050B
Q	Mains in socket with EMC Filter	90438902
N/S	Ignition Wire	90427704
N/S	Outside Air Kit	07260000
N/S	Flue Collar 100 mm	91911700
N/S	Outside Air Mounting Plate	07261000
N/S	#8 x 3/8 (3.9mm x 9.5mm) Washer Head Screw	94118106
N/S	Burner Tube Gasket	02568200
N/S	Wiring Harness	072050002

Notes:

SECTION 18: SPECIFICATIONS

18.1 Material Specifications

18.1.1 Combustion and Tubes

100 mm dia. 16 gauge heat treated aluminised mild steel.

18.1.2 Reflectors

NS3 H14 aluminium or 1.4016 2R stainless steel (option).

18.2 Heater Specifications

18.2.1 Sequence Controller

Fully automatic, single try, direct spark, 100% shut off ignition flame rectification module.

18.2.2 Electrical

Rating: 230V, 50 Hz, single phase, 1 amp
Connection: 3 pin moulded plug

18.2.3 Gas Supply

Connection: Rc1/2 (1/2" BSP int)
Natural G20:Minimum - Inlet 15 mbar (6 in wg)
Maximum - Inlet 50 mbar (20 in wg)

Natural G25:Minimum - Inlet 17.5 mbar (7 in wg)
Maximum - Inlet 50 mbar (20 in wg)

LP Gas (Propane or Butane):
Minimum - Inlet 32.5 mbar (13 in wg)
Maximum - Inlet 50 mbar (20 in wg)

18.3 Venting Specifications

18.3.1 Fans

BH-15, 20, 25, 30..... Model: Torin DSF 133-42

BH-25 EF, 30 EF, 35 EF... Model: Torin DSF 133-42

BH-35, 40, 45 ..... Model: Torin DSA 524-202

BH-40 EF, 45 EF 50 EF ... Model: Torin DSA 524-202

BH-50 ..... Model: Magnetek JF1G

BH30DL, 40DL ..... Model: Torin DSA 524-202

BH50DL/EF, 60DL/EF, 70DL/EF ..... Model: Magnetek JF1G

Multiburner ..... Model: Airflow 83 BTLW
..... Model: Airflow 90 BTLW

Consult the manufacturer for availability of alternate fans.

18.3.2 Flue

When fitted, the flue must be 100 mm, or greater in diameter, and must conform to National Codes. The flue must be self supporting. Inlet must be 100 mm diameter. Multiburner - Flue will be 150 mm diameter. Flue material must conform to National Codes. The flue must be self supporting.

18.4 Suspension Specifications

Hang heater with materials with a minimum working load of 33 kg.

18.5 Controls Specifications

Time switches, thermostats, etc. can be wired into the electrical supply. External controls supplied as an optional extra.

18.6 Linear Heater	BH15ST	BH20ST	BH25ST BH25ST/EF	BH30ST BH30ST/EF	BH35ST BH35ST/EF	BH40ST BH40ST/EF	BH45ST BH45ST/EF	BH50ST BH50ST/EF	BH55ST*
Input - Gross (kW)	15	20	25	30	35	40	45	50/51	55
Input - Net (kW)	13.5	18	22.5	27	31.5	36	40.5	45/46	49.5
Tube Length (mm)	6096	9144	9144	12192	12192	12192	15240	15240	18288
Overall Heater Length (mm)	6661	9709	9709	12757	12767	12767	15815	15850	18579
Weight (kg)	41	55	55	68	68	68	81	81	95
Heated Area (m^2)	20-160	30-210	40-265	50-315	55-370	65-420	70-475	80-525	90-620
Minimum Installation Height (m)	3.5	3.5	3.5	3.5	4.6	5.0	5.0	5.0	6.0
Recommended Installation Height (m)	3.5	3.6	3.9	4.2	4.8	5.5	6.7	7.6	8.0

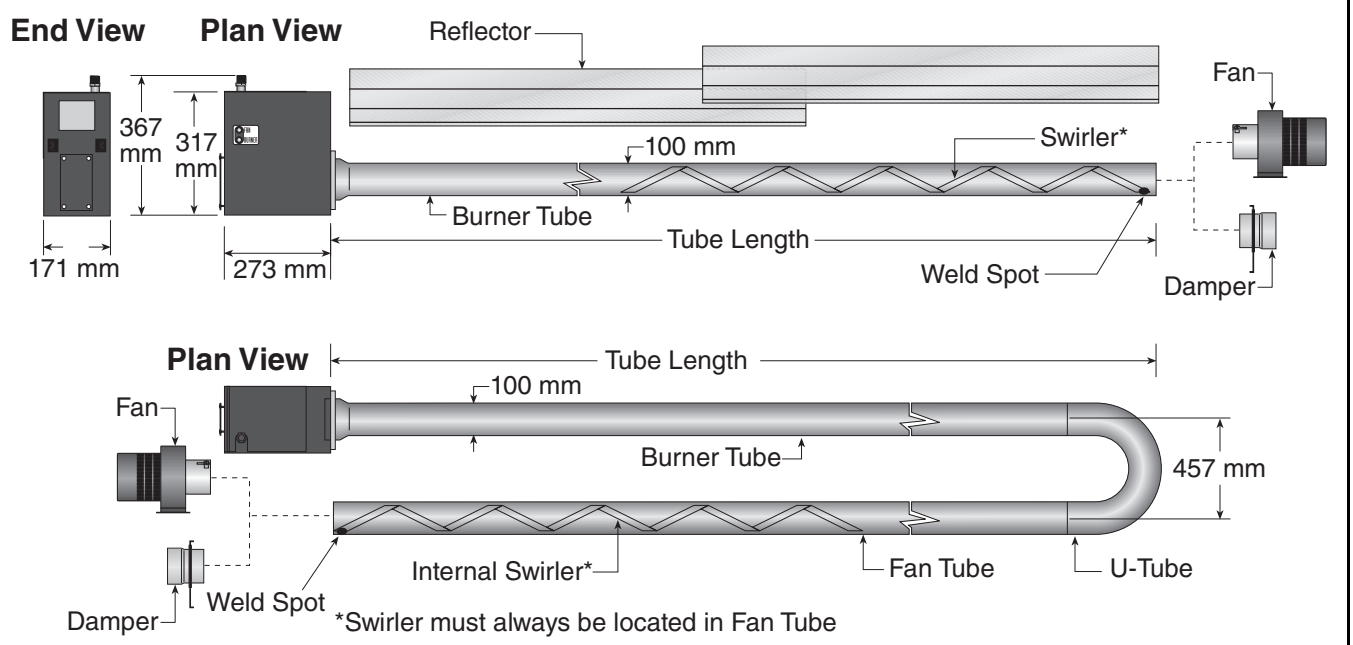
* Only available in Multiburner.

18.7 Double Linear Heater	BH30DL	BH40DL	BH50DL BH50DL/EF	BH60DL BH60DL/EF	BH70DL BH70DL/EF
Input - Gross (kW)	30	40	50	60	70
Input - Net (kW)	27.5	36	45	54	63
Tube Length (mm)	12802	18898	18898	24994	24994
Overall Heater Length (mm)	13462	19558	19558	25654	25654
Weight (kg)	82	110	110	136	136
Heated Area (m^2)	50-315	65-420	80-525	100-630	110-740
Minimum Installation Height (m)	3.5	3.5	3.5	3.5	4.6
Recommended Installation Height (m)	3.5	3.6	3.9	4.2	4.8

18.8 U-Tube Heater	BH15UT	BH20UT	BH25UT BH25UT/EF	BH30UT BH30UT/EF	BH35UT BH35UT/EF	BH40UT BH40UT/EF	BH45UT BH45UT/EF	BH50UT BH50UT/EF
Input - Gross (kW)	15	20	25	30	35	40	45	50
Input - Net (kW)	13.5	18	22.5	27	31.5	36	40.5	45
Tube Length (mm)	3531	5055	5055	6579	6579	6579	8103	8103
Overall Heater Length (mm)	3822	5346	5346	6870	6870	6870	8394	8394
Weight (kg)	39	54	54	65	65	66	96	96
Heated Area (m^2)	20-160	30-210	40-265	50-315	55-370	65-420	70-475	80-525
Minimum Installation Height (m)	3.5	3.5	4.0	4.7	5.0	5.0	5.0	5.0
Recommended Installation Height (m)	3.5	3.6	4.0	4.7	5.0	5.5	6.7	7.6

18.9 Burner Specifications

Figure 35: RADIANT SERVICES™ Linear and U-Tube Specifications



18.9.1 Burner Specifications	BH15	BH20	BH25	BH30	BH35	BH40	BH45	BH50	BH55*
Burner Airplate ID Number	20	15	12	6	7	9	10	11	19
Jet Numbers - Natural G20 & 25	#30	3.8 mm	#19	4.7 mm	#9	#3	#2	B	E 6.8 mm (G25)
Jet Numbers - Propane/Butane	#46	2.3 mm	#37	#33	3.1 mm	3.3 mm	#29	#26	#24
Jet Numbers - Pressure Couple	1.95 mm	2.25 mm	2.5 mm	2.7 mm	2.9 mm	3.2 mm	3.25 mm	3.4 mm	-
Gas Consumption** Natural G20 (m^3/h)	1.43	1.91	2.38	2.86	3.36	3.81	4.29	4.77	5.25
Gas Consumption** Natural G25 (m^3/h)	1.66	2.22	2.77	3.32	3.88	4.43	4.99	5.54	6.09
Gas Consumption** Propane (m^3/h) [kg/h]	0.56 [1.07]	0.75 [1.43]	0.94 [1.79]	1.13 [2.15]	1.32 [2.50]	1.51 [2.86]	1.69 [3.22]	1.88 [3.58]	2.07 [3.94]
Gas Consumption** Butane (m^3/h)	0.43	0.57	0.72	0.86	1.00	1.15	1.29	1.43	1.57
Governor Pressure Butane (mbar)	21.4	19.7	19.2	17.4	18.2	17.9	16.9	18.4	18.3
Governor Pressure Butane (in wg)	8.6	7.9	7.7	7.0	7.3	7.2	6.8	7.4	7.3
Governor Pressure Propane (mbar)	26.1	26.1	26.1	27.4	26.1	28.6	28.6	26.1	26.1
Governor Pressure Propane (in wg)	10.5	10.5	10.5	11.0	10.5	11.5	11.5	10.5	10.5

*Only available in Multiburner. **Based on Gross Caloric Value.

Natural G20:	8.7 mbar	3.5 in wg
Natural G25:	11.1 mbar	4.5 in wg
Natural G25 BH 55*:	9.5 mbar	3.8 in wg

18.9.2 EF Burner Specifications	BH25/EF	BH30/EF	BH35/EF	BH40/EF	BH45/EF	BH50/EF
Burner Airplate ID Number	14	5	6	5	6	10
Jet Numbers - Natural G20	#20	#16	#9	#5	#2	B
Gas Consumption** - Natural G20 (m^3/h)	2.38	2.86	3.36	3.81	4.29	4.86

**Based on Gross Caloric Value.

Attach this information to a wall near the RADIANT SERVICES™ heater.

CLIMATE SOLUTIONS

RADIANT Services

Read the Installation, Operation, and Service Manual thoroughly before installation, operation, or service.

Know your model number and installed configuration.

Model number and installed configuration are found on the burner and in the Installation, Operation and Service Manual.

Write the largest clearance dimensions with permanent ink according to your model number and configuration in the open spaces below.

OPERATING INSTRUCTIONS

1. STOP! Read all safety instructions on this information sheet.
2. Open the manual gas valve in the heater supply line.
3. Turn on electric power to the heater.
4. Set the thermostat to desired setting.

TO TURN OFF THE HEATER

1. Set the thermostat to off or the lowest setting.

IF THE HEATER WILL NOT OPERATE, TO ENSURE YOUR SAFETY, FOLLOW THESE INSTRUCTIONS TO SHUT DOWN YOUR HEATER

1. Set the thermostat to off or the lowest setting.
2. Turn off electric power to the heater.
3. Turn off the manual gas valve in the heater supply line.
4. Call your registered installer/contractor qualified in the installation and service of gas-fired heating equipment.

⚠WARNING

Fire Hazard

Some objects can catch fire or explode when placed close to heater.

Keep all flammable objects, liquids and vapors the required clearances to combustibles away from heater.

Failure to follow these instructions can result in death, injury or property damage.

Maintain_____clearance to the side and _____ clearance below the heater from vehicles and combustible materials.

Radiant Services Limited
Unit A, Kings Hill Business Park
Darlaston Road, Wednesbury
West Midlands WS10 7SH UK
Telephone: +44 (0) 121 556 4495
Fax: +44 (0) 121 556 8142

Installation Code and Annual Inspections:
All installations and service of RADIANT SERVICES™ equipment must be performed by a contractor qualified in the installation and service of equipments sold and supplied by Radiant Services and conform to all requirements set forth in the RADIANT SERVICES™ manuals and all applicable governmental authorities pertaining to the installation, service and operation of the equipment. To help facilitate optimum performance and safety, Radiant Services recommends that a qualified contractor annually inspect your RADIANT SERVICES™ equipment and perform service where necessary, using only replacement parts sold and supplied by Radiant Services.

Further Information:
Applications, engineering and detailed guidance on systems design, installation and equipment performance is available through RADIANT SERVICES™ representatives.Please contact us for any further information you may require, including the Installation Operation and Service Manual.

This product is not for residential use.

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